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[Despatch Abstract.

Administration report Department of Industries and commerce - Report for the year ended 31-3-1946.

GOVERNMENT OF MADRAS

Abstract

Administration report - Department of Industries and Commerce - Report for the year ended 31-3-1946 -Recorded

- -

Development Department

G.O.No.Ms. 655 dated 11th February 1948

Read the following:-

From the Director of Industries and Commerce, No.162 AI/46, dated 24-9-46/15-10-1946.

O r d e r:-

R e c o r d e d.

(By order of His Excellency the Governor)

K.G.Menon,
Secy. to Govt.

To the Director of Industries & Commerce, Madras.

/True copy/

Office Assistant,
Madras Record Office.

ADMINISTRATION REPORT OF THE DEPARTMENT OF INDUSTRIES AND COMMERCE, MADRAS FOR THE YEAR ENDING 31ST MARCH 1946.

Direction.—I was in charge of the department during the year under review except when on three months leave from 25th February 1946. Sri Rao Bahadur N. M. Adyanthaya who continued as Joint Director acted for me during my absence on leave. Khan Sahib N. V. Quraishi Sahib was my Personal Assistant since 5th April 1945.

Exhibitions.—This department participated in several exhibitions during the year.

Committees.—I continued to serve on several committees connected with industry, trade, transport and technical and craft education.

Coal control.—I continued to be the Provincial Coal Controller for the year under review.

A conference was held at Calcutta to consider questions concerning supply of larger quantities of coal to industries not engaged on war work. The conference agreed to the principle of transfer of responsibility for allotment and supply of coal and coke to industries which were on war work to the Provincial Coal Controller, a transfer that was to be completed by 31st March 1946. This transfer of supplies was to be completed by the 31st March 1946.

During the year under review the provincial quota which was 75 wagons in the beginning was raised to 150 wagons per month from September 1945. Besides this, an additional sanction of 10 wagons of bye-product hard coke specially for the use of the foundaries and engineering works was also sanctioned. Further, 100 wagons of slack coal per month were allotted to this Province from September 1945 onwards and the same was increased in December 1945 to 166 wagons.

The total quantity of steam coal, hard coke and soft coke received under the provincial quota in the Province during the year under report was about 10,600 tons, 6,860 tons and 910 tons, respectively.

There have been no instances of any serious violations of the contro regulations.

PAPER CONTROL.

Staff.—I continued to function as the Provincial Paper Controller till 25th February 1946 when I went on leave and was succeeded by Sri Rao Bahadur N. M. Adyanthaya. Sri K. P. R. Menon held the post of Deputy Paper Controller till September 1945, when he relinquished the post to rejoin his permanent post in the Government Press. The Personal Assistant to the Director of Industries and Commerce held additional charge of the post of Deputy Paper Controller till 30th December 1945 when Sri R. N. Ethirajulu Nayudu, B.A. (Hons.), B.L., took over and continued to hold the post throughout the rest of the year. To assist the Deputy Paper Controller in the discharge of his duties, an Assistant Paper Controller was sanctioned and Mr. Mir Baquir Ali appointed to that post with effect from 1st October 1945. With a view to exercise strict control and ensure adequate supervision in the administration of the various control orders, seven more Paper Control Inspectors were appointed during the year.

In order to ensure a fair and equitable distribution of the limited supply of paper received in this Province, the Madras Paper Control (Licensing, Economy and Distribution) Order was promulgated during the year. This was in supersession of the Madras Paper Dealers' Licensing Order, 1943. All classes of regular consumers of paper were given paper issue cards indicating the maximum quantity of paper each is entitled to consume under the provisions of the Paper Control (Economy) Order. While the three mills in South India were able to despatch regularly their allotments to this Province, the mills in Bengal were not able to do so on account especially of transport difficulties. Towards the end of the year, however, these mills were able to procure shipping space to a limited extent. As a result of the cessation of hostilities regular importers of paper were also able to get fair quantities of paper from United Kingdom and United States of America and this tended to ease the position. On the whole the year now concluded showed a marked improvement over the previous one.

The Paper Control Advisory Committee which continued to function during the year met thrice to discuss matters relating to administration of the Control Orders.

During the year under review, 1,399 licences to deal in paper, 2,024 quota cards and 2,739 permit cards were issued.

There were 91 cases of contravention of the Paper Control Orders. Suitable action was taken in all these cases.

Iron and steel.—This section continued to distribute the defective and standard steel to the fabricators of consumer goods. During the year under review a total quantity of 1,635 tons of usable defectives and 3,890 tons of standard steel was distributed to the fabricators of cosumer goods. In addition to this, 18 wagon load of bulk production cuttings and T.C.S.D. cuttings were also allotted to large-scale fabricators. The control on the acquisition of usable defectives was relaxed with effect from 1st November 1945 and hence the department advised the fabricators to negotiate with the controlled scrap merchants direct for their requirements of usable defectives. As regards standard steel, the department continued to issue recommendation to the Regional Deputy Iron and Steel Controller, Madras Circle, for the issue of written orders. As a result of the relaxation on the acquisition of defectives, the various departmental stock yards at Bezwada, Rajahmundry and Vizianagram were closed as they were not required any more under the revised scheme.

Board of Industries.—One meeting of the Board of Industries was held during the year when the following applications for aid were considered :—

(1) Application from the National Chemicals, Limited, Masulipatam, for subscription of shares by Government to the value of rupees one lakh.

(2) Application from the Radio and Electricals, Limited, Madras, for subscription of shares to the value of rupees four or five lakhs.

(3) Application of Sri K. Hanumanthappa, Rekatla village, Rayadrug, Bellary district, for a loan of Rs. 2,000 for the development of hand-made paper manufacture.

The Board recommended applications numbers (1) and (2), the latter for a subscription of rupees two lakhs only and rejected the third for want of adequate security. The subscription amount in the case of No. (1) has not been disbursed as certain matters in regard to qualifications of Government Director have not yet been settled. The amount of shares in regard to item (2), i.e., rupees two lakhs was disbursed during the official year.

A brief review of the affairs of the concerns aided under the Act is being submitted to Government separately.

Bureau of Commercial Intelligence and Statistics.—The number of enquiries, both postal and verbal, from the public in regard to industrial and commercial matters was very large. Several references were, as usual, received from the Director of Commercial Intelligence, Calcutta, in regard to overseas trade introduction, settlement of disputes between Indian and overseas firms, names of manufacturers and suppliers of several articles, etc. Applications for railway priorities and supply of controlled articles, licences to export their products or to import machinery and materials into India were received and dealt with. Applications for capital issue were received and forwarded after scrutiny to Government for sanction. The annual return of large industrial establishments coming under the operation of the Factories Act was compiled as usual. Summaries of manufacturers and mines and quarries were also prepared for inclusion in the Administration Report of the Province.

Geological survey of the minerals of the Province.—The Geological Survey Party of the Government of India continued to work during the year.

Industrial development.—The termination of the war gave a great impetus to the starting of industries in this Province but owing to the non-availability of machinery, raw materials, etc., the progress made in this respect was not considerable. A number of applications for expanding the existing textile mills and for starting new mills were received and dealt with. The extension of 9 existing mills and the starting of 25 new mills were recommended to the Government of India. The question of developing the cement and sugar industries in this Province also engaged the attention of the Government during the year and recommendations in this respect were made by the Madras Government to the Government of India. The planned development of the hydrogenated oil industry was implemented by the selection of suitable locations in eight different centres of the Province.

District Industries Officers.

1. *The administration of controls over iron and steel, cement, coal, etc.*—The appointment of the District Industries Officers was made at a time when a general shortage of almost every conceivable raw material needed by industry was the order of the day. By their able administration of the several control measures put into operation by Government, the District Industries Officers were able to protect many hundreds of cottage industries from being wiped off. The District Industries Officers were enabled by their close contact with local industries and their first-hand knowledge of the requirements of these industries to ensure a fair distribution of the materials in short supply.

2. *Starting of new industries.*—During the very short time which has elapsed since their appointment, the District Industries Officers have been able to bring to the people of their locality accurate knowledge regarding the starting of several industries which are suited to the local conditions. The extent to which the District Industries Officers have been successful in this work can be gauged by the number and variety of new industries which have been recently started in the different districts of the Presidency. A very large share of the credit for the starting of these industries goes to

the District Industries Officers. They did the initial spade work of contacting enterprising and semi-enterprising men in their jurisdiction, telling them of the possible new industries, illustrating by facts and figures about similar industries elsewhere, even occasionally drafting the Articles of Association and the Memorandum of Association, etc., required for launching a new company. A brief list of industries helped by the District Industries Officers is given below :—

Handloom weaving, hand-spinning, cotton carpet-making, tape-making, kora mat weaving, slate and slate pencil manufacture, cumbly weaving, pottery industry in Cuddapah and Kurnool districts, soap and toilet industry in Anantapur and Bellary, pottery industry in Bellary, sericulture at Lepakshi, leather tanning at Gooty, starch industry in Anantapur, slate industry at Tadpatri, mica industry at Ramsagar, hand-made paper manufacture at Chicacole, bell metal industry at Parvatipuram and Bobbili, rice mill industry in Nellore district, ceramic industry in Nellore, rotary ink manufacture at Adyar, bakery industry at Madras, cashewnut industry in Nellore, soapstone vessels manufacture at Nellore, mat-weaving industry at Sulurpet, button-making industry at Wallajahbad, wooden fancy articles manufacture at Udayagiri, brass vessels manufacture at Nellore, handloom-weaving industry at Nellore, lace industry at Bhimavaram and Narasapur taluks, pile carpet weaving and blanket weaving at Kadiam and Rajahmundry, coir fibre industry at Amalapuram, aluminium and brassware manufacture at Rajahmundry, textile mill and power laundry in Madura, tile industry at Trichinopoly, rice mill industry in Chittoor and North Arcot districts, glass bangle-making at Pillamedu, tanning and leather industry in North Arcot, vegetable dyes manufacture from senna leaves at Tuticorin, chrome tanning industry at Shermadevi, glue manufacture at Tinnevelly and Kadambur, saw mill industry at Rajapalayam, agar industry at Virudunagar, Asbestos cement factory at Tinnevelly, tile and brick manufacure at Vallioor and Valanad, dry cells and phenyle manufacture at Tinnevelly, match industry at Sivakasi, groundnut oil industry at Virudunagar, kora mat industry at Pattamadai in Tinnevelly district, coir industry in Ramnad and palmyra leaves article manufacture at Vadakangulam.

The following industrial establishments were started mainly under the inspiration given by the District Industries Officers :—

Karnatak Vegetable Oils Refineries, Limited, Hagar Bommanahalli, Hindupur Vegetable Oils and Refineries, Limited, Hindupur, the Rayalaseema Mills, Limited, Nirmal Glass Works, Olavakot, New Era Brush Manufacturing Company, Palghat, Hindustan Ceremics, Pappinisseri, Cycle, Rickshaws Manufacture, Tellicherry, Sugar Factory, Anakapalle, Indian Micanite and Mica Products, Limited, Gudur, Andhra Industries, Akivedu, Gopal Glass Works, Anaparthi, the Mannaparai Industries, Limited, Rajeshwara Spinning Mill at North Arcot, the Oriental Ceramics, Limited, Kalashasti, the Chittoor Sugars, Limited, Vegetols, Limited, Chittoor, the South Indian Industrial Engineering Syndicate, Limited, Gudiyattam, Tuticorin Salt Refineries, Limited, the Meenachi Ice Factory, Tuticorin and Engineering Workshop at Rajapalayam.

3. The third and most important part of the work done by the District Industries Officers is the collection of data relating to different industries, preparation of type schemes for each industry, collection of information as o the resources of each district in industrial raw materials and preparing lans for the future industrial development of the Province, district by istrict.

The work done by the District Industries Officers in this connexion will not in the nature of things be very evident just at the moment. All the same this work is of tremendous importance if the future industrial development of the Province is to be on sound and healthy lines.

Last but not least is the assistance which the District Industries Officers have been able to give in the resettlement of demobilized military personnel. With their close contact with local industrialists and first-hand knowledge of their requirements the District Industries Officers have been able to give valuable advice regarding the possibilities of absorption of demobilized soldiers. They have also been able to suggest practical schemes for new industries which can be started on a co-operative basis and give employment to hundreds of demobilized soldiers.

Manufacture and supply of rice mill machinery spare parts.—The Rice Mill Spare Parts Section created in G.O. Ms. No. 452, Development, dated 2nd February 1945, continued to function during the year. Under this scheme two departmental depots, one at Madras and another at Bezwada were maintained. The depots were replenished from time to time partly by requisitioning imported goods and partly by local purchases and manufacture. Spare parts valued at Rs. 1,24,142 were thus stocked at Madras and Bezwada. The total number of applications received from mills during the year was 1,094 of whom 984 mills were supplied with spares valued at Rs. 1,15,779.

In addition, a few applications from Pudukottah, Cochin and Orissa were also complied with. The section also scrutinized and recommended 121 applications for iron and steel and 94 applications for import licences for spare parts.

Coir section.—The new coir section which was sanctioned in November 1945 functioned only for three months before the close of the year. The large demands of the Supply Department during the last war for coir goods gave a fillip to the coir industry of Travancore and a cottage-*cum*-factory industry for coir mats and mattings was built up there; whilst a similar industry in the West Coast of this Province languished for want of improved methods and improved organizations. The main problem was to make charka spinning of coir yarn more popular in the villages than hand-spinning, which gives lower output and inferior yarn. Realizing the need for introducing charka spinning as a cottage industry, the Government in G.O. Ms. No. 4549, Development, dated 17th November 1945, sanctioned the starting of three coir factories, one in each of the districts of Malabar, South Kanara and East Godavari. Under this scheme two factories have already been started one of which is at Calicut and another is at Ullal in South Kanara. Each factory has a number of cottage yarn units attached to it. These units make charka yarn and send it to the factory for conversion into mats, mattings and ropes, etc. At the close of the year six yarn units were functioning at Calicut, Ponnani, Vallikunnu and Quilandy in Malabar district and Ullal and Mulki in South Kanara.

Production and sales.—During the period under review the following articles were manufactured :—

Machine-spun yarn	3,934 lb.
Hand-spun yarn	469 „
Door mats	160 Nos.
Door brush mats	13 „

Government Coir School, Beypore.—Mr. Syed Mohammad continued as Superintendent throughout the year. The Superintendent was on tour for 220 days in the year and visited a number of places. During his tours, the Superintendent discussed methods of developing coir industry on modern lines with the coir traders and merchants.

The Superintendent organized and supervised five evacuee coir centres in Malabar and one in South Kanara and coir section of the Soldiers' Pre-releasing Training Centre at the Third Madras Regiment at Madukarai and co-operative coir workers' societies in Ramnad, Tanjore and Malabar districts.

As usual the Coir School continued to give training in making all kinds of coir goods, such as coir yarn, spinning, chain mat, mats and mattings, rugs, carpets, belts for machines, brooms, cordages, nets, coat brushes and shaving brushes, etc.

Average monthly wholesale prices of some of the principal Madras commodities during the year 1945–46.

Commodity and unit. (1)	April 1945. (2)	May 1945. (3)	June 1945. (4)	July 1945. (5)	August 1945. (6)	September 1945. (7)	October 1945. (8)
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1 Cotton (Cambodia), Tiruppur, per candy of 520 lb.	396 4 0	404 8 0	411 4 10	419 8 0	412 1 7	385 2 0	375 12 0
2 Cotton (Karunganni), Tiruppur, per candy of 520 lb.	333 4 0	341 8 0	341 12 10	344 0 0	342 4 10	317 8 0	315 0 0
3 Groundnut (Nandyal), per candy of 531 lb.	57 6 9	54 14 3	54 6 0	73 6 6	68 11 10	67 2 0	67 13 3
4 Groundnut (Coimbatore), per candy of 531 lb.	69 0 0	69 4 6	69 6 0	76 14 0	71 4 0	69 9 0	75 12 0
5 Pepper (Tellicherry), per cwt.	62 14 0	59 0 0	56 9 7	57 0 0	57 6 5	58 12 0	58 14 0
6 Paddy (Tenali), per bag of 164 lb.	11 0 4	11 0 4	11 0 4	11 0 4	11 0 4	11 0 4	11 0 4
7 Rice (Tenali), per bag of 164 lb.	16 5 0	16 5 0	16 5 0	16 5 0	16 5 0	16 5 0	16 5 0
8 Coir-yarn (Alleppey), per candy of 672 lb.	132 8 0	132 8 0	132 8 0	132 8 0	132 8 0	132 8 0	132 8 0
9 Copra (Cochin), per candy of 655 lb.	186 4 0	167 0 0	183 0 0	210 0 0	200 0 0	200 4 0	223 12 0
10 Coconut oil (Cochin), per candy of 655 lb.	284 11 [illegible]	262 9 0	284 11 5	322 1 0	299 15 7	308 6 6	329 11 3
11 Jute (Vizianagram), per candy of 506 lb.	67 0 0	67 0 9	67 0 0	67 0 0	67 0 0	67 0 0	67 0 0
12 Tobacco (Erode), per maund of 28 lb.	12 12 9	9 11 3	9 0 0	9 0 0	9 0 0	9 0 0	9 0 0
13 Castor seed (Anantapur), imperial maund of 82-2/7 lb.	12 2 0	12 2 0	10 3 0	9 5 0	9 11 0	9 11 0	9 11 0
14 Nellikuppam sugar, per cwt.	Not quoted.	Not quoted.	Not quoted.	Not quoted.	Not quoted.	Not quoted.	Not quoted.
15 North Indian sugar, per cwt.	26 8 0	26 3 0	26 3 0	26 3 0	26 3 0	25 7 6	26 1 0
16 Tanned cow hides—							
Bangalore, 8-8½ lb., per lb.	1 8 0	1 8 0	1 13 0	1 13 0	1 13 0	1 14 0	2 0 0
Up-countries, 8-8½ lb., per lb.	1 8 0	1 8 0	1 12 0	1 12 0	1 11 0	1 12 0	1 14 0
Coasts, 7-7½ lb., per lb.	1 8 0	1 8 0	1 12 0	1 13 0	1 13 0	1 13 0	2 0 0
17 Tanned goat skins—							
Good, per lb. ..	2 14 0	2 14 0	2 15 6	2 15 6	2 15 6	2 14 0	2 14 0
Fair, per lb. ..	2 13 0	2 14 0	2 13 0	2 13 0	2 13 0	2 11 0	2 10 6
Common, per lb.	2 9 0	2 9 0	2 12 0	2 12 0	2 12 0	2 10 6	2 10 0
18 Tanned sheep skins—							
Good, per lb. ..	3 11 0	3 11 0	3 14 0	4 1 0	4 1 0	3 14 0	3 12 0
Fair, per lb. ..	3 7 0	3 8 0	3 12 0	3 13 0	3 13 0	3 12 0	3 11 0
Common, per lb.	3 3 0	3 3 0	3 7 0	3 10 0	0	3 9 0	3 5 0

Commodity and unit.	November 1945.	December 1945.	January 1946.	February 1946.	March 1946.	Average of the monthly prices for	
						1944-45.	1945-46.
	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Cotton (Cambodia), Tiruppur, per candy of 520 lb.	375 0 0	375 0 0	388 0 0	414 8 0	409 2 8	366 2 10	397 2 11
2 Cotton (Karungani), Tiruppur, per candy of 520 lb.	310 2 0	308 8 0	319 14 0	336 12 0	348 8 0	309 3 7	329 14 10
3 Groundnut (Nandyal), per candy of 531 lb.	68 12 3	72 15 6	79 4 4	80 3 3	81 8 8	62 11 3	68 14 6
4 Groundnut (Coimbatore), per candy of 531 lb.	78 7 6	82 12 0	90 12 0	96 13 6	98 4 0	70 7 0	79 0 3
5 Pepper (Tellicherry), per cwt.	61 8 0	65 10 8	69 2 0	66 12 0	70 0 0	54 10 8	61 15 5
6 Paddy (Tenali), per bag of 164 lb.	11 0 4	11 0 4	11 0 4	11 0 4	11 0 4	10 15 0	11 0 4
7 Rice (Tenali), per bag of 164 lb.	16 5 0	16 5 0	16 5 0	16 5 0	16 5 0	16 11 1	16 5 0
8 Coir-yarn (Alleppey), per candy of 672 lb.	132 8 0	132 8 0	132 8 0	132 8 0	132 8 0	131 9 8	132 8 0
9 Copra (Cochin), per candy of 655 lb.	301 4 0	315 0 0	320 0 0	320 0 0	320 0 0	188 4 11	245 8 8
10 Coconut oil (Cochin), per candy of 655 lb.	334 11 3	449 12 0	498 5 6	513 2 2	481 12 3	292 2 7	364 2 5
11 Jute (Vizianagram), per candy of 506 lb.	67 0 0	67 0 0	67 0 0	67 0 0	67 0 0	70 12 2	67 0 0
12 Tobacco (Erode), per maund of 28 lb.	9 0 0	9 0 0	9 0 0	9 0 0	9 0 0	11 5 0	9 6 0
13 Castor seed (Anantapur), imperial maund of 82-2/7 lb.	9 11 0	11 4 0	12 4 6	13 0 0	No stock.	12 2 11	10 13 6
14 Nellikuppam sugar, per cwt.	Not quoted.	Not quoted.	Not quoted.	Not quoted.	Not quoted.	Not quoted.	Not quoted.
15 North Indian sugar, per cwt.	25 13 0	25 13 0	25 10 0	25 8 0	25 12 6	24 10 5	25 14 8
16 Tanned cow hides—							
Bangalores, 8-8½ lb., per lb	2 1 0	2 1 0	2 1 0	2 1 0	2 2 0	1 5 1	1 14 3
Up-countries, 8-8½ lb., per lb	1 15 0	2 0 0	1 15 6	1 15 0	2 0 0	1 3 11	1 12 10
Coasts, 7-7½ lb., per lb.	2 1 0	2 1 0	2 1 0	2 1 0	2 1 0	1 5 5	1 14 0
17 Tanned goat skins—							
Good, per lb. ..	3 0 0	3 0 0	2 15 6	2 15 0	3 2 0	2 11 6	2 15 3
Fair, per lb. ..	2 12 0	2 13 0	2 12 0	2 11 0	2 15 0	2 10 1	2 12 6
Common, per lb.	2 12 0	2 11 0	2 11 0	2 10 6	2 13 0	2 8 1	2 10 11
18 Tanned sheep skins—							
Good, per lb. ..	3 13 0	3 14 0	4 1 0	3 14 0	3 15 0	2 5 1	3 14 1
Fair, per lb. ..	3 12 0	3 11 0	3 13 0	3 11 0	3 11 0	2 2 2	3 11 2
Common, per lb.	3 5 0	3 4 0	3 10 0	3 8 0	3 9 0	1 15 5	3 7 0

Nine students completed the two years' course in 1945–46. The number of students under training in the second-year course is 39 and in the first-year course 23 students. There are students from Andhra and Tamil districts undergoing training.

Five military men were given training at the school in rope-making.

Articles valued at Rs. 1,135 produced by the trainees during the year 1945–46 were sold.

General review of commercial and industrial conditions.—This year will long be remembered as the year in which the Allies were able ultimately to crush the Axis powers. The Calcutta Index number of wholesale prices for all commodities (July 1941—100) which was 306 in March 1945 fell to 302 in March 1946. The index number of wholesale prices of (1) all food articles and (2) non-food articles for Madras City for March 1946 were 308 and 243, respectively, as against 262 and 250 in the corresponding month of the previous year.

The value of cheques which passed through the Madras Bankers' Clearing House during the year advanced sharply from Rs. 2,27,37,05,982 during the year ended 31st March 1945 to Rs. 2,98,22,86,210 during the year ended 31st March 1946. The Bank rate reminded unchanged at three per cent during the year. The gross earnings of the Madras and Southern Mahratta Railway amounted to Rs. 1,898·44 lakhs as against Rs. 1,621·26 lakhs during 1944–45. The increase in earnings is due to more coaching and goods traffic and also to more sundry earnings. The gross earnings of the South Indian Railway amounted to Rs. 1,338·04 lakhs as compared with Rs. 1,192·85 lakhs for 1944–45. The increase in earnings is mainly due to large number of passengers travelling by rail and introduction of additional train services.

The table of prices of commodities facing this page shows that the average prices for 1945–46 were higher than the corresponding prices for the previous year excepting in the following cases :—

Rice (Tenali), jute (Vizagapatam), tobacco (Erode) and castor seed (Anantapur). The prices of commodities in March 1946 were higher than the corresponding prices in March 1945 except in the case of rice (Tenali), coir yarn (Alleppey), jute (Vizagapatam), tobacco (Erode) and North Indian Sugar. There was no stock of castor seed during the month of March 1946.

Trade in 1945–46.—Figures of imports into and exports from this Province are not yet available. The following data in regard to India's foreign trade during the year will give an idea of the general trend of the trade in this Province :—

Imports from overseas countries which recorded a substantial improvement even in 1944 have shown a tendency to improve further while exports from India have not made a corresponding rise. In consequence the favourable trade balance which continued to be one of the outstanding features during the War time has tended to decline to small proportions. The total exports for 1945 have amounted to Rs. 240·13 crores as against Rs. 231·60 crores in the previous year. Actual exports of Indian merchandise have come to Rs. 218·79 crores, the share of foreign merchandise, that is, re-exports being 21·35 crores. Articles under food, drink and tobacco have more or less remained stagnant at Rs. 52·73 crores while those coming under raw materials have staged a substantial rise from Rs. 48·43 crores to 57·16 crores. Manufactured items have experienced a marked decline from Rs. 116·54 crores to Rs. 93·75 crores.

There has been an all round improvement in imports. The increase in imports in 1945 as compared with the preceding year has been to the extent of Rs. 56·54 crores at Rs. 237·39 crores, the exact percentage of improvement being 31 as against a rise of hardly four per cent in exports. In consequence the favourable trade balance has declined from Rs. 50·75 crores (1944) to a negligible sum of Rs. 2·24 crores.

The chief exports from India were jute manufactures, cotton piecegoods, tea, oil seeds, raw cotton, cashewnuts, lac, mica, manganese and hides and skins. The chief imports were tinned foodstuffs, food, drink and tobacco, mineral oils, copra, raw wool, cutlery and allied products, dyes and colours, mill work and machinery, iron and steel goods, non-ferrous metals, paper, vehicles, etc.

New industrial undertakings.—Three hundred and fifty-seven companies were registered during the year of which 10 were without share capital. The authorized capital of the companies registered with capital amounted to Rs. 16,94,84,960 and the subscribed capital to Rs. 1,35,71,180. Of the new

companies with share capital, 142 were trading and manufacturing companies, 73 banking companies, 48 transit and transport, 43 mills and presses, 10 tea and other planting companies, 18 hotel, theatres, etc., 2 estate lands and buildings, 3 mining and quarrying and 8 others.

Mining operations.—Mining operations were carried on in the districts of Anantapur, Bellary, Chingleput, Chittoor, Coimbatore, Cuddapah, East Godavari, Guntur, Kistna, Kurnool, Nellore, the Nilgiris, Salem, Trichinopoly and Vizagapatam.

Manganese.—In the Vizagapatam district no mineral was extracted, only pumping operations being carried out.

Magnesite.—The production of magnesite fell from 38,025 tons in 1944 to 28,047 tons in 1945. Exports of magnesite fell from 216,195 cwt. valued at Rs. 5·73 lakhs to 63;059 cwt. valued at Rs. 2;97 lakhs. The importing countries were United Kingdom, United States of America, Netherlands, Sweden, Denmark and Belgium. Conditions in the export trade on which this industry substantially depends have been exceedingly difficult.

Mica.—The production of mica declined during the year. Nellore produced 1,119 tons of mica as against 1,420 tons and the Nilgiris about 26 tons as against 7 cwt. 7 lb. during the previous year. Exports of mica amounted to 9,083 tons valued at Rs. 28·16 lakhs as against 6,822 cwt. valued at Rs. 19·06 lakhs during the previous year. The Joint Mica Mission continued to purchase mica till about the end of the year when it was decided to close down the purchasing branch.

Other minerals.—The production of asbestos decreased from 58 tons to 38·25 tons. The output of barytes advanced from 8,364 tons to 13,333 tons and that of bauxite from 2,314 tons to 2,989 tons. The production of china clay rose from 75 tons to 249 tons in the Nellore district. The output of corundum fell from 42 tons to 19 tons whilst that of felspar and gypsum rose from 117 tons and 16,880 tons to 497 tons and 27,811 tons respectively. The production of phosphatic nodules rose from 311 tons to 524 tons, quartz from 24 tons to 60 tons and red oxide of iron from 1,042 tons to 1,452 tons, 23,640 seers of steatite were mined in the Nellore district during the year as against 20,469 seers in the previous year whilst in Anantapur the output was 44 tons against 1,255 tons during the previous year. The output of yellow ochre and slate stones was 1,122 tons and 949 tons as against 864 tons and 728 tons respectively. About 92 tons of graphite were produced in the East Godavari district. There was a fall in the output of gold from 361·1 oz. to 38·2 oz.

Cotton.—The area under cotton in the Madras Province in 1945–46 was estimated at 1,585,700 acres as against 1,636,500 acres for the corresponding period of last year, representing a decrease of 6·0 per cent as compared with the finally recorded area of 1,686,275 acres in 1944–45. The decrease in area in the current year as compared with the area in 1944–45 occurs in all the districts of the Province except Guntur, Salem, Coimbatore, Madura and Ramnad, where there was an increase. The average wholesale prices of Cambodia Cotton (Tiruppur) which was Rs. 396–4–0 per candy of 520 lb. in April 1945 rose steadily to Rs. 419–8–0 in July but fell to Rs. 375 in November and again rose to Rs. 414–8–0 in February 1946 and declined to Rs. 409–2–0 in March 1946. The average wholesale price of Karunganni cotton (Tiruppur) which was Rs. 333–4–0 per candy of 520 lb. in April 1945 rose to Rs. 344 in July and fell to Rs. 308–8–0 in December 1945 but again rose to Rs. 348–8–0 in March 1946.

Cotton spinning and weaving industry.—There were 67 cotton mills at work with 8,887 looms and 1,542,968 spindles. Exports of cotton piecegoods by sea to foreign countries amounted to 29·02 million yards valued at Rs. 360·38 lakhs as against 39·69 million yards valued at Rs. 682·94 lakhs. Of this quantity coloured piecegoods accounted for 19·69 million yards valued at Rs. 309;57 lakhs. Exports of grey piecegoods amounted to 8·07 million yards valued at Rs. 25·21 lakhs and white piecegoods to 1·25 million yards valued at Rs. 15·60 lakhs.

Exports of cotton twist and yarn fell to 1·49 million lb. valued at Rs. 18·81 lakhs from 2·22 million lb. valued at Rs. 36·82 lakhs during the previous year.

The end of the war naturally led to a stoppage of war demands and made available extra quantities to the civilian market. In view however, of the absence of imports and general inadequacy of textile material it was found necessary to continue the control of prices, production and distribution. The All-India Scheme of distribution of yarn to deficit areas from surplus area was continued.

With a view to maximize production the Government introduced a number of measures of rationalization. As far as the spinning industry was concerned this entailed a restriction on the number of counts spun on the basis of spindlage. The extra production envisaged has not materialized in spinning due to technical factors involved in the change over from war to civilian production, prices were reduced once during the year. The transport position eased considerably.

The following statement shows the price of cotton yarn produced by prominent mill in this Province during the year :—

Date.	40s'44s basis 40s per 10 lb.	26s'32s basis 28s per 10 lb.	20s'25s basis 20s per 10 lb.
	RS. A. P.	RS. A. P.	RS. A. P.
1st April 1945	16 5 0	13 9 0	10 10 0
1st November 1945 ..	15 13 0	13 1 0	10 2 0

Subsequent changes were only on 5th April 1946.

Madras handkerchiefs.—The Madras handkerchiefs are intended exclusively for export to Africa. During the year in question there was little business done as most of the Madras handkerchiefs weavers switched on their looms to manufacture of more profitable cloth, namely, lungies, sarees, etc. Shippers were reluctant to place orders with the weavers at competitive prices as the prices in Africa did not re-act to the same level.

Lungies.—Unlike the Madras handkerchiefs this trade flourished during the year. There was a phenomenal rise in wages from Rs. 5 to Rs. 22 for weaving 44 inches by 18 yards hand-woven cloth. This was the main reason for the increase in the price of lungies, though the following inter alia were contributory causes :—

1. Global scarcity of cloth.

2. Scarcity of yarn, especially finer counts.

3. No control over prices for handloom cloth. Though the consumer was paying a heavy price for lungies, he was getting cloth of poor quality.

The exports of lungies and sarees to foreign countries by sea amounted to 7·8 million yards valued at Rs. 130·76 lakhs.

Hosiery.—There were fourteen organized hosiery factories under the operation of the Factories Act during the year. The industry had a satisfactory year. The handicap experienced by the industry due to delay in obtaining import licence for needles came to a satisfactory conclusion when the Government decided to put this article on the free list.

Jute.—There were four jute mills under operation during the year. The termination of hostilities with Germany and Japan did not in any way affect the jute trade so far as civil requirements were concerned. It is true that prior to the cessation of hostilities there was a considerable diminution in war orders. On the other hand, the importance of the jute products particularly for the transport of foodgrains and pulses was emphasized to a greater extent than previously. Jute goods were subject to the Jute (Price Control) Order, 1944. Rupees 29·94 lakhs of jute products were exported by sea to foreign countries. The Commonwealth of Australia took the largest share of jute manufactures.

Silk and wool.—The boom in the Sericultural industry as a result of war conditions continued during the year under review. Silk valued at Rs. 1·65 lakhs was exported to foreign countries as against Rs. 3·22 lakhs during the previous year. Rupees 30·22 lakhs of woollen manufactures were exported by sea to foreign countries.

Tanned hides and skins.—In the tanned hides section production during the first half of the year was hampered by transport difficulties and shortage of labour. In May 1945 the Ministry of Supply (who continued to be the sole buyers of kips) raised its schedule of prices by an average of about six annas per pound or 25 per cent and the Ordinance controlling the internal price of kips in India was cancelled.

Civilian demand in Agra, Calcutta and other centres was great but diminished from July onwards. The Madras Kip market was consistently higher than the maximum prices available from the Ministry of Supply and the increase was set off by a corresponding rise in local prices. Supplies dwindled and the volume of exports became so small that in August a bonus scheme was announced which entitled suppliers to claim a bonus at the end of the month according to the total number of bales delivered, the minimum quantity to qualify for a bonus being 1,500 bales, while a delivery of 3,000 bales and over obtained the maximum, the bonus ranging from two annas to seven annas per pound. The scheme was inaugurated at the end of the war and had a very beneficial effect on kips productions, which owing to the high price of raw hides and other difficulties had become unremunerative. Exports of tanned hides advanced from 4,046 tons valued at Rs. 127·06 lakhs in 1944–45 to 5,229 tons valued at Rs. 214·66 lakhs during the year under review. Of this quantity tanned cow hides accounted for 4,869 tons valued at about Rs. 198·32 lakhs, buffalo calf for 120 tons valued at about Rs. 4·43 lakhs and cow calf for 240 tons valued at about Rs. 11·92 lakhs. Practically the whole of the exports was taken by the United Kingdom.

In the tanned skins section the ceiling prices of tanned goat and sheep skins fixed by agreement between the Leather Control in the United Kingdom and Price Administration in New York remained unchanged throughout the year and private trading continued subject to this. The Madras market was very firm throughout the period particularly for sheeps, and although advances in the ceiling prices had been given in 1944, viz., 6 *d.* in February 1944 for both goat and sheep and 6 *d.* for goat and 10 *d.* for sheep in October 1944, the price level was still far too low for business to be done by Madras

with a reasonable profit on pre-war selection. As a result, a marked debasement of selections took place and became an unhealthy feature and bye-product of price control. During the last quarter of the period under review the United States of America came in as strong buyers of dry salted sheep skins at prices far higher than the ceiling rates for these skins fixed in London. The result was that the number of sheep skins available for tanning was considerably reduced and the ceiling prices for the tanned sheep skins became still more unattractive. Exports of tanned skins to foreign countries by sea amounted to 3,999 tons valued at Rs. 284·86 lakhs. Of this goat skins accounted for 2,642 tons valued at Rs. 176·91 lakhs, sheep skins 1,339 tons valued at Rs. 101·26 lakhs and other skins 18 tons valued at Rs. 6·69 lakhs.

Sugar.—The area planted with sugarcane in 1945 is estimated at 156,250 acres. When compared with the corresponding estimate of 156,090 acres for the previous year and the actual area of 155,596 acres according to the season and crop report, the present estimate reveals an increase of 0·1 per cent and 0·4 per cent respectively. The estimate of the previous year was above the actual area by 0·3 per cent.

The estimated area is the same as that of last year in Nellore. An increase in the area is estimated in Vizagapatam, Kistna, the Ceded districts, Trichinopoly, Madura, Ramnad and Tinnevelly and a decrease in other districts of the Province. The present estimate includes an area of 8,130 acres under ratoon sugarcane. The yield is estimated at 3,727,920 tons of cane, the gur equivalent of which is 409,790 tons as against 4,189,840 tons of cane with a gur equivalent of 459,910 tons according to the final figures of the previous year. The present estimate reveals a decrease of 11·0 per cent in the case of cane and 10·9 per cent in the case of gur as compared with the previous year.

It is estimated that the actual production for 1945–46 season will be about 51,400 tons. The sugar production during 1944–45 was 46,500 tons. Sugar control continued during the year. Distribution from factories was controlled by the Commissioner of Civil Supplies, Madras, in accordance with the Zonal scheme of sugar distribution. As in South India production in North India was below the quantity originally estimated and in consequence the Sugar Controller for India reduced the quota for Madras by 13 per cent. The ex-factory price of sugar was increased by six annas per maund in March 1946.

The Etikoppaka Co-operative Agricultural and Industrial Society, Ltd., worked for 120 days, crushed 7,988 tons of cane and produced 738·5 tons of sugar. The yield of sugar on cane was 9·25 per cent. The Sri Rama Sugar Mills, Ltd., Bobbili, worked for 111 days, crushed 15,414 tons of cane and produced 1,394 tons of sugar. The yield of sugar was 9·03 per cent. The K.C.P., Ltd., Vuyyuru, worked for 109 days crushed 82,520 tons of cane, the yield of sugar was 8·18 per cent. The Coimbatore Co-operative Sugar Manufacturing Society, Ltd., Podanur, worked for 191 days, crushed 7,637·81 tons of cane and produced 588·5 tons of sugar, the yield of sugar was 7·70 per cent. The India Sugars and Refineries, Ltd., Hospet, worked for 159 days, crushed 72,988 tons of cane and produced 7,032 tons of sugar, the yield of sugar was 9·61 per cent. The East India Distilleries and Sugar Factories Ltd., Nellikuppam, worked for 138 days, crushed 230,637·12 tons of cane and produced 21,195·36 tons of sugar, the yield of sugar was 9·19 per cent. The Deccan Sugar and Abkari Co., Ltd., Samalkot, worked for 89 days, crushed 21,023 tons of cane and produced 2,075 tons of sugar, the yield of sugar on cane was 9·87 per cent. The Deccan Sugar and Abkari Co., Ltd.,

Pugalur worked for 162 days, crushed 28,010·766 tons of cane and produced 2,396·990 tons of sugar, the yield of sugar on cane was 8·557 per cent. The Kirlampudi Sugar Mills worked for 93 days, crushed 8,505 tons of cane, the yield of sugar on cane was 7·75 per cent. The Lakshmi Sugar Mills, Alvartirunagari, refined sugar out of palmyra jaggery for 36 days in the months of September and October 1945 after the mill was purchased by the present management in May 1945. The quantity of palmyra jaggery melted for refining was 5,135 maunds and the quantity of sugar produced was 2,747 maunds. The Al. Vr. St. Sugar Mills, Distillery and Rice Mill, Tachanallur, suspended manufacturing operations since 1943.

Oil seeds and oil—Groundnut.—The area sown with groundnut in this Province in 1945 is estimated at 3,929,000 acres. When compared with the corresponding estimate of 3,911,900 acres for the previous year and the actual area of 4,299,592 acres according to the Season and Crop Report of the previous year, the present estimate reveals an increase of 0·4 per cent and a decrease of 8·6 per cent respectively. A decrease in the area sown is estimated in all the districts of the Province except in Bellary, Anantapur and Nellore and is mainly due to want of timely rains in the sowing season. The yield is expected to be 1,341,200 tons of unshelled nuts as against 1,951,000 according to the Season and Crop Report of the previous year representing a decrease of 31·3 per cent.

By the end of March 1945 there was ample stock of the winter crop of 1944–45. The agriculturists parted with their produce but stockists and factory owners laid in stock and were unwilling to release in anticipation of higher prices. The oil millers too held good stocks. After a temporary decline, prices again improved. In the meantime it was reported that due to want of rains the yield of summer crop would be poor and that sufficient quantity would not be available for export which caused uneasiness in the market. Later on, the Ministry of Food, London, entered the market and was prepared to pay a premium for ready shipment. These factors contributed to harden the market and to increase the prices so much that by August/September 1945 exporters offered very attractive prices well above the purity of oil. This opportunity was availed of by oil millers to dispose of their surplus stock.

Owing to failure of rains the summer crop were badly affected and exporters could not get their usual share business as expeller owners and country chekkus offered higher prices.

Owing to adverse seasonal conditions the new winter crop of 1945–46 season was affected. The prices offered for the new crop were good. As the dealers had earned profit by selling the winter crop of 1944–45 season in advance, they were favourably inclined towards forward commitments in winter 1945–46 season. As the Ministry of Food was also interested in buying new crop in advance, an appreciable business was done. Contrary to the expectations of dealers the prices ruled firm with upward tendency at the critical period when arrivals were expected to start into the market. The demand for oil being keen, oil millers were active buyers causing local prices to be maintained at a high level. By December 1945, prices were at their highest but about this time reports about the failure of food crops became so strong that acute famine was predicted. To conserve all resources the Government declared groundnut an essential commodity and banned export to foreign countries. This came as a shock to the groundnut trade. For some time the state of affairs was in a fluid condition but no collapse occurred as oil

crushers were operating due to continuous heavy demand for oil. In addition the Government granted permit to some of the surplus districts for exporting kernels to Bengal which also lent support to the market and helped to maintain the previous level.

The prices during April, May and June 1945 declined but improved somewhat by the end of June recording Rs. 58–12–0 per candy of 531 English lb. Prices shot up to Rs. 82–4–0 by the end of July but during August prices showed signs of decline. There was a further drop in prices during September and the month closed with Rs. 74 per candy. During October, November and December the prices forged ahead from Rs. 75 to Rs. 92 per candy. The groundnut market was wavering and featureless during January, February and March 1946, pending Government decision to impose a ban on export. The prices during this period ranged from Rs. 81 to Rs. 93 per candy. The following statement shows the fluctuation in the price of groundnut kernels and oil during the months of the year:—

Months.	Groundnut kernels in bags per ton nett f.o.b.						Groundnut oil per candy of 500 lb. nett ex-factory.
	£	s.	d.	£	s.	d.	
April 1945	21	17	6	21	0	0	150/160
May 1945	21	0	0	21	0	0	145 155
June 1945	20	10	0	21	10	0	135/145
July 1945	21	10	0	27	10	0	165/170
August 1945	27	10	0	27	0	0	165/175
September 1945	27	0	0	27	2	0	160/167½
October 1945	27	2	0	27	0	0	165/175
November 1945	27	0	0	26	5	0	175/185
December 1945	26	5	0	31	10	0	190/205
January 1946	32	0	0	30	0	0*	207/190
February 1946	29	0	0	30	0	0	185/2 2
March 1946	31	0	0	32	10	0	212/215

* Nominal.

Export of groundnut seed to foreign countries by sea were 196,604 tons valued at Rs. 607·54 lakhs as against 214,827 tons valued at Rs. 630·616 lakhs during the previous year. United Kingdom was the chief importer, its share being 151,634 tons valued at Rs. 471:02 lakhs.

Groundnut oil.—For the past five years the demand for groundnut oil and groundnut cake has been increasing. The margin of profit realized in oil industry has been attractive. The main feature of the groundnut oil market has been the influence of the demand from Calcutta. During April, May and June 1945, the oil market declined as there were no shipping facilities to Calcutta. In July the market revived on the reports that the Ministry of Food was buying groundnuts heavily and that the summer crop was a failure. Due to recurring transport difficulties buyers withdrew and August 1945 had a quieter market. In September there was improvement which steadily kept on till the end of October. Again in November, Calcutta entered the market and commenced buying. The market remained firm in January 1946. The announcement of the Provincial Government that they had no intention to handicap oil industry stimulated prices in February. During March 1946, permits to export to Assam, Bengal and other Provinces were issued liberally. Thereupon the market became active. Later on rumours to the effect that the Government of India contemplated to control the price of oil on an All-India basis affected the market and caused a decline. One lakh nineteen thousand one hundred and thirty-eight gallons of groundnut oil valued at Rs. 5·05 lakhs were exported to Ceylon.

Gingelly.—The area sown with gingelly in 1945–46 is estimated at 557,500 acres. When compared with the area of 591,200 acres estimated for the corresponding period of last year it reveals a decrease of 5·7 per cent. The present estimate reveals a decrease of 9·5 per cent when compared with the finally recorded area of 516,142 acres in 1944–45. The yield is estimated at 62,000 tons which is less than that estimated in the Season and Crop Report of the previous year by 18·6 per cent. Eighty-three tons of gingelly seeds valued at Rs. 55,874 and 60,520 gallons of gingelly oil valued at Rs. 4·27 lakhs were exported during the year.

Castor.—The area under castor up to 25th November 1945 is estimated at 245,700 acres. When compared with the area of 262,700 acres estimated for the corresponding period of last year, it reveals a decrease of 6·5 per cent. The estimate of last year was less than the actual area of 284,759 acres by 7·8 per cent. The crop is grown on a large scale in Guntur, the Deccan, Nellore and Salem. The yield is estimated at 20,000 tons as against 24,200 tons estimated during the corresponding period of last year and 25,180 tons in the Season and Crop Report of last year. Exports of castor seed by sea to foreign countries rose from 830 tons valued at Rs. 2·41 lakhs to 2,292 tons valued at Rs. 7·44 lakhs the importers being United Kingdom and the Commonwealth of Australia. Sixteen thousand eight hundred and eighty gallons of castor oil valued at Rs. 76,396 tons were exported to Ceylon during the year.

Soap industry.—The demand for soaps (household and toilet) from the general public increased during the year and some of the factories continued to work double shifts. The importation of tallow for soap-making purpose continued to be restricted. The collection of country tallow from the slaughter houses by local people has therefore become a paying line of business. Hardened oil is being used to a considerable extent both in household and toilet soaps. The position of eluppai oil which is a substitute for tallow was discouraging as supplies were insufficient. The supply of caustic soda was regular and much better than in 1944–45. The price of coconut oil rose up abnormally. Large scale manufacturers of soap are however slightly better placed than others as they have just begun to get oil from Ceylon through the Government of India, at a rate considerably lower than the local market rate. Considerable difficulties were experienced in getting adequate suppliers of perfumes for toilet soaps. Two hundred and forty-six cwt. of soaps valued at Rs. 36,000 were exported to Ceylon during the year.

Cashewnuts.—The demand for cashew kernels and cashew shell oil from America continued during the year. Prices for both raw and finished goods reached unprecedented levels. Eleven thousand three hundred and seventy-six tons of cashew kernels valued at Rs. 541·94 lakhs were exported during the year. United States of America took the whole quantity.

Coir.—There was a large demand for both coir yarn and coir fibre. In spite of a somewhat small coconut crop there seems to be quite enough raw material but labour for turning the raw material into yarn and for the finishing process was not available. Export of coir manufactures rose from 604,837 cwt., valued at Rs. 187·65 lakhs to 746,475 cwt., valued at Rs. 292·16 lakhs. Three hundred and sixty-two tons of coir unmanufactured valued at Rs. 1·43 lakhs was exported from this Province.

Tiles.—The tile industry was as a whole active during the year under review especially with the Government and Military orders and export by

country craft to Ceylon. The cost of production showed a steep rise owing to the dearness allowance paid to labour and to further increases in the cost of clay and fuel. Exports of tiles amounted to Rs. 10·50 lakhs as against Rs. 8·49 lakhs during the previous year, the chief importing countries being Ceylon and South Africa.

Manures.—The distribution of fertilisers continued to be in the hands of the Department of Agriculture. Due to the increased imports of sulphate of ammonia larger stocks were allotted to the trade. Due to the "Grow More Food Campaign" and propaganda done by the fertilizer firms the fertilizers offered to the cultivators were taken up with great avidity. The price of fertilizers was falling gradually and there are indications of a further substantial reduction.

Chemicals.—The supply position of chemicals in general during the first half of the year under review was fairly satisfactory but the fuel shortage in the United Kingdom to some extent affected imports during second half. The expansion of the terms of the open general licence No. VII which now admits of the import of large range of chemicals without the need for taking out specific licences should tend to create healthier and more normal conditions in import business. Delay was still often experienced in obtaining adequate steamer freight space. As regards dyestuffs the supply position of thionol blacks improved considerably during the year while direct colours which form a large part of the demand in South India also showed a slight increase. Deliveries of fast colours were moderate. Supplies of pigment finishes required by the leather industry were received in larger quantities and a large number of tanneries benefited by this supply.

The Mettur Chemical and Industrial Corporation, Limited, continued t manufacture bleaching powder, caustic soda, liquid chlorine, hydrochloric acid, hydrogenated oil and soap. The Corporation has also taken up the manufacture of hardened oil for industrial purposes, namely, vegetable tallow. Bleaching powder and liquid chlorine continued to be distributed under control by the Chemical Directorate, Caustic soda was also distributed in accordance with the instructions issued by the Chemical Directorate. Owing to short supply of these chemicals only requirements of essential industries, such as textile mills, paper mills, soap factories and sanitation and public health requirements were met as far as possible.

Cement.—Deliveries of cement from the South Indian factories during 1945–46 were slightly lower as compared with the previous year. This is attributable to some extent to lower production because of the low quantity of coal supplied to the factories, curtailment of power supply and movement difficulties. The selling price of cement was reduced from Rs. 70 to Rupees 68–12–0 per ton from 1st December 1944. This price was again reduced to Rs. 63–12–0 per ton from 1st November 1945 and to Rs. 60 per ton from May 1946. With the cessation of hostilities the military reduced their demands considerably with the result that releases for civil purposes increased progressively.

Match industry.—There was an increase of about 19 per cent in the consumption of matches during the year over that of last year. Production also increased by about 22 per cent over last year's figures. Prior to the war there was practically no export of matches to other Provinces. In 1944, 10,700 cases were exported to other places and in 1945, 25,500 cases, the main receiving markets being Bombay, Calcutta, Bareilly and Karachi in order of importance and this in spite of the ban on despatches by rail by

the local Regional Controller of Railway Priorities. Approximately 5,000 cases were exported to Mombasa, Zanzibar, Persia, Iraq, etc. Prices remained steady and as a matter of fact they showed an improvement in 1945 as compared with those which prevailed in 1944. As regards the small scale industry the production during the year was 66,000 cases as against the average annual production of 25,500 cases for the last five years prior to the war.

Pepper.—The area under pepper in 1945 in Malabar and South Kanara is estimated at 102,700 acres as against the final area of 103,021 acres in the previous year. The yield is estimated at 9,360 tons as against 9,350 tons in the previous year. Exports of pepper rose from 35,378 cwt. valued at Rs. 19·80 lakhs in 1944–45 to 150,100 cwt., valued at Rs. 98·05 lakhs in 1945–46.

Tea.—The South Indian Tea Crop for the year was a little short of the previous year's crop, due mainly to unfavourable conditions, shortage of fertiliser and labour. As in the previous year, the whole of the exportable surplus was bought by the British Ministry of Food at the basic price plus an allowance to cover increased cost of production. The consumption of tea in India rose to record levels during the year. Prices of internal tea were also good.

Coffee.—The marketing of coffee continued to be done through the Indian Coffee Board. The crop was almost the same as in the previous year. The internal demand increased and prices were stabilised by the Board. Exports of coffee increased slightly from 24,429 cwt., valued at Rs. 22·83 lakhs in 1944–45 to 27,707 cwt., valued at Rs. 25·06 lakhs during 1945–46.

Rubber.—The entire rubber crop of South India was acquired by the Government of India. The "Bonus" system by which extra payments were made to producers for yields above certain stipulated basic quantities was withdrawn during the year and substituted by a flat rate of Re. 1 per lb. for group I rubber. The new system was in force till 1st February 1946 when the prices were scaled down by about 23 per cent. During the year there was a certain amount of extension of land under rubber but there is no disposition in regard to large scale extension in view of the very uncertain future plantation of rubber. The export of raw rubber fell from 6·72 million lb. valued at Rs. 51·10 lakhs during the last year to 5·07 million lb., valued at Rs. 37·59 lakhs during the period under review. United States of America took 4·48 million lb. and United Kingdom the rest.

Miscellaneous.—Exports of senna increased from Rs. 1·50 lakhs to 6·22 lakhs. Nux vomica of the value of Rs. 4·63 lakhs was exported during the year, the chief importing country being United Kingdom. Rupees 3·28 lakhs worth of myrobalans were exported to United Kingdom as against an export of Rs. 8·40 lakhs during the previous year. Earthenware and porcelainware of the value of Rs. 3·37 lakhs were exported to Ceylon. Exports of glass and glassware to Ceylon rose from Rs. 1·82 lakhs to 2·24 lakhs. Exports of cuttings of hides and skins raw to United Kingdom amounted to Rs. 2·52 lakhs. Exports of lemon grass oil amounted to Rs. 69·61 lakhs as against Rs. 32·02 lakhs during the previous year. Exports of sandalwood oil rose from Rs. 77,892 to Rs. 86,567. Cardamom valued at Rs. 17·45 lakhs, ginger of the value of Rs. 15·53 lakhs, turmeric of the value of Rs. 11·35 lakhs were exported during the year. Exports of tobacco (unmanufactured) amounted to Rs. 126·80 lakhs and cigars, Rs. 1·67 lakhs as against Rs. 65·04 lakhs and Rs. 1·32 lakhs, respectively during the

previous year. Exports of tobacco (manufactured), other sorts, to Ceylon amounted to Rs. 40·56 lakhs.

Indian Merchandise Marks Act.—All District Magistrates have reported that there has been no violation of section 12 of the Indian Merchandise Marks Act by any of the weaving mills during the year.

Jaggery demonstration.—A jaggery demonstration from 8th April 1945 to 20th May 1945 on the manufacture of jaggery from palmyra juice was conducted at Palayacottai, Coimbatore district, for Sri A. Sankarai Mauradiyar. The jaggery was better in quality than that usually prepared in that area.

A second demonstration was conducted for the Andhra Provincial Palmyra Jaggery Industrial Union, Tanuku. This was held from 10th March to 23rd May 1945. Daily about 400 lb. of sweet juice was boiled. The jaggery was better in quality than that prepared by the tappers by the crude method.

Glue demonstration.—As per G.O. No. 2563, Development, dated 2nd July 1945, it was ordered that the manufacture of glue on a cottage basis from hide fleshings, waste product of tannery should be demonstrated in North Arcot district. A demonstrator was appointed and was given training at the Institute in the manufacture of glue in order to carry on the demonstration. Although the period of training was over the actual demonstration could not be started till January 1946 because of the unsuitability of weather. The glue demonstrator suddenly resigned his appointment and another demonstrator had to be appointed in his place. A B.Sc. graduate in Chemistry who was appointed as glue demonstrator with effect from 1st February 1946 was given training in the manufacture of glue. During the period under review, he was still undergoing training. Due to the circumstances stated above, no glue demonstration was actually staged during the year of 1945–46.

Tanning demonstration parties.—During the year the number of tanning demonstration parties was increased to four—one for the Circars, another for Tamil districts and two for the Ceded districts. Arrangements were in progress at the close of the year for starting the parties. The party intended for the Tamil districts commenced work on the 20th March 1946 at Melvisharam, North Arcot district, a place selected by the South Indian Tanners and Dealers' Association, Ranipet, which had undertaken to run the industry with the apprentices trained at the Tanning Demonstration Centre. The chief features of the tanning demonstration party at this place is that 50 per cent of the apprentices were Muslims and the remaining Scheduled Castes and Christians. The admission of Muslim apprentices was introduced at this centre because almost all the tanners in the area are Muslims and due to the fact that the development of leather goods manufacturing industry should go hand-in-hand with the leather tanning industry in the real development of the cottage leather industry.

One of the parties intended for Ceded districts conducted demonstration at Gooty. On the completion of the demonstration it was arranged that the Vadugur Industries Company under whose auspices this demonstration was carried on should commence manufacture of leather goods on a commercial scale and the staff of the party helped the company to run the work on correct commercial lines.

Chemical laboratory.—Minerals form the raw materials for many key industries. Before any mineral industry can be started in any locality, it is necessary to carry out a Geological Survey of the locality to ascertain the

extent of the mineral deposits necessary and a thorough chemical investigation into the quality of the minerals available, in order to determine their suitability for the particular industry that is projected. It is hardly possible to over-estimate the importance of the need for accurate and detailed chemical investigations; failure to conduct such preliminary researches has often been the cause of the ruin of many a promising venture in the past. Recognising the fundamental importance of the work of chemical analysis and investigation of minerals to the growth of industries in the province, the Government have started a laboratory, where work has been in progress on the following inerals :—

(*a*) Limestones of the Salem and Tinnevelly districts.
(*b*) Chromites of the Salem district.
(*c*) Clays and other ceramic raw materials from the Nellore district
(*d*) Glass sands from various parts of the Presidency.
(*e*) Alkaline earth deposits of the Presidency.

Dr. G. Gopala Rao, Professor of Chemistry, Andhra University, has been directing the work of the various minerals in an honorary capacity. Besides supervising and guiding the Chemists under the various schemes, Professor Gopala Rao has also attended to a large number of enquiries of an industrial character, received in the Department from the public and the Government.

(*a*) *Limestones of the Salem and Tinnevelly districts.*—Limestone is one of the basic minerals as it finds extensive use in the three great industries of building construction, agriculture and chemical manufacture. Some of the important chemical industries in which limestone or lime find extensive use, are (1) Calcium carbide, (2) Calcium cyanamide, (3) Bleaching powder. (4) Cement, (5) Sodium carbonate, (6) Caustic soda, (7) Glass, (8) Pottery glazes and enamels, (9) Paper, (10) Sugar, (11) tanning of hides, (12) Metullurgy, (13) Pharmacy, (14) the manufacture of Satin white, putty, distempers and other materials used in the paint industry.

The impurities commonly present in limestone are silica, alumina, iron oxide, magnesia, manganese, fluorine, etc. While some of these may be permitted in the limestone for the manufacture of one produce, their presence may prove very detrimental for the manufacture of some other product. Definite specifications can be laid down from a chemical standpoint for limestones to be used in various chemical industries. Only a thorough chemical investigation can decide whether a particular limestone will be useful for a particular chemical industry or not.

During the period under report, the chemical analysis and investigation of sixty samples of limestones from the Salem district and of two from the Tinnevelly district were completed and detailed results given in the annual report on the subject. Many products, which are at present imported from abroad, can be made by a proper exploitation of the limestone deposits of the Salem and Tinnevelly districts. The new industries that could thus be developed would provide employment for quite a large number of persons and would lead to the development of the required scientific and technical talent.

For use in many chemical industries, limestone must first be converted into lime by burning. There is not a single firm in South India, which manufactures and supplies chemical lime up to standard specifications. Some of the Salem and Tinnevelly deposits yield limestone of an exceptionally high degree of purity. These limestones are, however, crystalline in character and cannot be burnt to yield lime in the ordinary shaft kiln, unlike other limestones. In order to ensure a satisfactory burning of crystalline limestones, a rotary kiln is needed. Moreover, a rotary kiln, fired by

oil, is particularly well adapted for the production of chemical lime as it eliminates contamination with the fuel ashes and is more economical of labour. It helps also the recovery of carbon dioxide and waste heat. The question whether Government should start a service centre in Salem district where chemical lime is manufactured in the rotary kiln is under examination.

(*b*) *Chromites of the Salem district.*—Chromite is a mineral of great strategic importance, for it is used in the manufacture of special steels possessing increased hardness and tenacity, resistance to wear and corrosion etc. Special chromium steels find use in the manufacture of tanks and armoured cars, in making armour plate for warships, and in the manufacture of armour piercing bullets. Chromium steels are also finding increasing use for the fabrication of automobile parts, railway coaches, and for stainless cutlery. A special alloy of nickel and chromium is employed in the electrical industry in the form of wire and strip on account of its increased resistance and high softening point. Chromium compounds are used in electroplating, and in the manufacture of paints, and pottery glazes.

About a dozen samples of chromite from the Salem district have been assayed. The samples are low in chromium. The benefication of the low grade chromites of the Salem district requires careful and extended investigations. These needs must be carried out before their economic exploitation can be undertaken.

(*c*) *Raw materials for the ceramic industry.*—It is well-known that there occur in various parts of the province, large deposits of raw materials required for the different branches of the ceramic industry. In order to promote the development of the ceramic industry in the Province, the Government have decided to start a model ceramic factory at Gudur and have instituted an intensive Geological Survey of the neighbouring districts.

The samples of the various ceramic raw materials collected by the geologists are under chemical analysis in this laboratory.

(*d*) *Glass sands.*—Although our Province abounds in the minerals necessary for the glass industry, the manufacture of glass has not made much headway here and the Province depends on outside supplies to a large extent. Quite a number of industries which require glass bottles and containers are seriously handicapped. This state of affairs has considerably retarded the development of industries in the Province. Recently the Government have appointed a Glass Technologist to assist the growth of the glass industry in the Presidency.

Samples of glass sands collected by the Glass Technologist from Ennore, Chirala, Chinnaganjam and Mangalore have been analysed in the Chemical Laboratory. Investigations have also been conducted to find out how to improve the quality of the sands.

(*e*) *Alkaline earth deposits.*—On account of the war there has been a great shortage in the imports of soda ash commonly known as washing soda. Soda ash is one of the heavy chemicals that finds considerable use. Besides its use in laundering, large quantities of soda ash are required by the glass industry. Calculated on the basis of pre-war price, in a typical glass batch used by the glass factories in India, more than 75 per cent of the cost of the raw materials represents the cost of the soda ash. Soda ash is also used in the manufacture of caustic soda, sodium silicate, sodium bichromate, sodium citrate, sodium acetate, etc. If the Province of Madras is to develop effectively glass, soap, vegetable ghee, and paper manufacturing industries, the Province has become self-sufficient with regard to the supplies of soda ash.

It is known from times immemorial that alkaline earth tracts occur all over the Presidency and that the efflorescence from such areas are used by the village washermen. But no systematic data is available regarding the extent and nature of the tracts, the quality of the material available, etc. The efflorescence from the different tracts vary not only with regard to the percentage of soda carbonate available, but also with regard to other necessary salts present. Before any given alkaline earth tract could profitably be exploited on any large scale, a survey of the deposit with regard to both the quantity and quality should be made. The Government of Madras have initiated Research for the survey and utilization of alkaline earth deposits of the Presidency for the preparation of sodium carbonate and caustic soda. The scheme is expected not only to suggest ways and means of meeting the difficult situation arising out of the shortage of imports due to the war but also to stimulate the utilization of alkaline earth in the rural areas for the development of cottage industries.

The alkali chemist appointed for the purpose carried out an intensive survey of the Anantapur and Guntur districts and located several tracts, where one can gather alkaline earth containing a high percentage of sodium carbonate. Some of the samples collected contain sodium carbonate to a percentage as high as 15. It may be noted in this connexion that Dr. Marsden who conducted a similar survey many years ago could locate tracts which yielded only 3 to 5 per cent of sodium carbonate. A partial survey of Salem district has also been completed now. The alkali chemist has devised methods for (1) extraction of the sodium carbonate from the alkaline earth, (2) clarification of the extracts and (3) preparation of caustic soda from the clarified extract by causticisation with lime. It has also been found that the liquid caustic prepared from the extracts can be used for the manufacture of washing soap on a cottage scale. The possibility of utilizing the liquid caustic for the manufacture of hand-made paper is now being explored.

Under the scheme demonstrations have also been carried out at several centres in the Anantapur district in order to interest the local people in the matter of utilization of the alkaline earth. The demonstrations have elicited much public response.

Oil hydrogenation.—The Special Officer for the installation of Hydrogenation Plant, who took charge on 29th March 1945, got into touch immediately with the industrialists interested in the trade to guide him in the preparation of detailed estimates and plans for the construction of a hydrogenation factory at Calicut. Proposals submitted by me to Government in this regard were approved by Government in G.O. No. 4201, Development, dated 26th October 1945 and Government sanctioned the establishment of a vegetable factory at Calicut at the cost of Rs. 9,18,400 (rupees nine lakhs eighteen thousand and four hundred) on buildings, machinery, etc., and Rs. 50,64,600 (rupees fifty lakhs sixty-four thousand and six hundred only) as the working expenses, etc. for the factory.

The capacity of the plant will be 15 tons refining and ten tons hydrogenation per day. Besides being run as a commercial concern, the factory will provide facilities to train students and technical personnel in oil technology and to conduct research on vegetable oil with a view to improving the nutritive value. The factory will also train, if necessary, technical personnel required for the hydrogenation factories to be installed in the Province by private industrialists.

Government also sanctioned temporarily for a period of one year from the date of appointment of a Special Officer (Gazetted) on Rs. 200—410 per mensem for supervising the construction work of the factory with the necessary staff for the working of the factory. Preliminary work for the construction of the factory is nearing completion.

The site where the factory is to be located has been selected. It has an area of 6·23 acres. Trial borings were sunk in the site to find out the availability of water. The yield has been tested and found to satisfy the need of the Factory. On this assurance, the Collector of Malabar has been addressed to take acquisition proceedings. The plans and estimates for the quarters and office, store, etc., have been prepared by the Special Officer and forwarded to Government for transmitting the same to Chief Engineer for technical sanction. The structural steel work for the main factory is being designed including special foundation for the stanchions.

Most of the plant necessary for the construction of the factory is proposed to be fabricated locally. Quotations are being called for from various firms and orders are being placed. Orders have been placed with the Power Gas Corporation, Stock-ton-on-tees, England, for such of the machinery and equipment as are not obtainable in India. It is hoped that the factory will commence operations early in 1947.

Government have permitted seven industrialists of this Province to establish vegetable ghee factories. Necessary assistance is being given to them by way of technical advice and also in the matter of obtaining raw materials required for the construction of the factories.

CERAMICS.

Government Ceramic Factory, Gudur.—Revised plans and estimates were approved by Government and a Special Officer to supervise the construction of the factory with the requisite staff was sanctioned at the close of November 1945. The foundation stone for the factory was laid on the 17th February 1946 and the work is progressing.

Proposals have been sent to Government to establish at Gudur a Ceramic Institute to which the courses in Ceramics now run in the premises of the School of Arts and Crafts, Madras, will be transferred and where new courses of training in glass, enamel and cement products will be instituted. Orders of Government are awaited.

The Ceramic section at the School of Arts and Crafts, Madras, is under the charge of the Ceramic Superintendent and he with the assistance of an Instructor is engaged in training 24 students for the Supervisors' course and 8 for the Artisan course. The scheme which has been sanctioned for two years, in the first instance will be continued at Madras till the Ceramic Institute at Gudur materialises. In the meantime to meet the urgent need for accommodation, a temporary shed has been put up and additional equipment obtained under the sanction of Government. The scale of pay of the Ceramic Superintendent was raised during the year from Rs. 70—150 to Rs. 150—200 per mensem and a peon with a bicycle sanctioned to the section. The production side of the Ceramic section is also being looked after by the Ceramic Superintendent, assisted by a Supervisor and a Moulder.

The Ceramic Assistant, with headquarters at Madras, is in charge of ceramic training and demonstration centres situated outside Ceded Districts. He has to make periodical visits to the various pottery and demonstration centres under his control with a view to guiding the Supervisors and Demonstrators in the improved methods of manufacture of glazed and unglazed pottery wares and also to visit deposits of ceramic materials in

connexion with applications for mining leases. He arranges supplies of ready-made glazes, plaster, etc., to small scale and cottage manufacturers. He is however not able to meet the demands now for ready-made glazes and other materials for want of a Ball mill which is not readily available.

The Demonstration Centre at Dasupalayam, Guntur district, was abolished as the potters did not in spite of most strenuous efforts of persuasion evince any interest in learning improved methods of manufacture of ceramic wares. The Demonstration Centres at Taliparamba in North Malabar and at Vellore, Kanigiri, Arni and Gudiyattam in North Arcot district continued to function during the year. For constructing a kiln for the Potters' Co-operative Society at Taliparamba, North Malabar district, the cost of which has been estimated at Rs. 3,000, Government have offered financial assistance by granting a subsidy of Rs. 1,500. The construction could not however be completed on account of the abnormal increase in cost and non-availability of red and fire bricks and other materials. The question whether a smaller kiln could not be constructed within the sanctioned amount is under consideration. The Potters' Co-operative Society at Vellore, North Arcot district, is pressing for financial aid for the construction of a kiln and godown. The matter is under consideration.

The construction of the kiln sanctioned for the Potters' Union at Manamadura, Ramnad district, which was taken on hand in the month of December last is expected to be completed shortly.

A pottery training centre at Rajahmundry, East Godavari district, has been sanctioned during the year and it commenced work of training six potters at a time. The construction of a shed and a kiln has not been taken up as the selection of a suitable site is under correspondence with the Commissioner of the local Municipality.

Ceded Districts.—The Special Officer for the development of Cottage Industries, Cuddapah, is supervising the work of the pottery centres at Cuddapah, Harpanahalli, Bellary district, and Betamcherla, Kurnool district. He has been visiting deposits of clay and other ceramic raw materials in connexion with the applications for grant of mining leases to examine whether any portion of the deposits in Ceded Districts would be required for the use of the Department. He is also supervising the work of the local Potters' Co-operative Society with the assistance of the Ceramic Demonstrator, Cuddapah, with a view to keeping the ex-trainees engaged in the manufacture of improved ware. To withstand the competition in prices with crude country wares the local market, the ex-trainees are being supplied with processed materials free of cost by the Department. The Special Officer is also rendering technical assistance to the Cuddapah Ceramics, Limited, Cuddapah.

The proposals submitted by him for the starting of District Centres at Bellary and Anantapur and of divisional centres at Badvel and Proddatur in Cuddapah district, the conversion of the local pottery centre into a District Centre and the transfer of the Headquarters of the Special Officer from Cuddapah to Bellary are under the consideration of Government.

Cuddapah Pottery Training Centre.—During the past two years of its existence, eighteen potters who have successfully completed their course of training at the Pottery Training Centre, formed a Co-operative Production and Sales Society and are making good use of the new training they received. The centre has not been able to attract sufficient number of trainees, for

some time past, owing not only to lack of eagerness on the part of local potters but also to the good wages which they are able to earn without further training. As an incentive for the potters to join the training centre in larger numbers, it is proposed to disburse sale proceeds of the products made at the centre among the trainees up to a maximum of Rs. 30 per mensem in this as well as in the Harpanahalli (Bellary district) Centre. The number of potters trained during the year was ten.

Harpanahalli Pottery Training Centre.—Early in the year the number of trainees in this Centre went low. Due to the wide propaganda by the local Demonstrator and the assistance rendered by the local Panchayat Board President and the Revenue Officials the required number of trainees has joined the course. The number of potters trained during the year was six.

Betamcherla (Kurnool district) Factory cum Training Centre.—The Centre has trained about eleven potters so far. The kiln and a chimney are nearing completion and the construction of shed is progressing.

A rapid survey of Bellary and Vizagapatam districts with a view to locate suitable clays for the manufacture of bricks and tiles was conducted during the year and the results of the survey reported to Government.

To render technical assistance to the existing tile factories and to tender technical advice to intending tile manufacturers the post of a Technical Assistant (Tile Manufacture) has been sanctioned for a period of one year. The post has not yet been filled.

Post-war reconstruction.—Proposals have been submitted for the opening of porcelain and semi-porcelain service centre at Pappinisseri, North Malabar district, and for the opening of service centres for the supply of bodies, glazes, etc., to manufacturers of stoneware. Rockingham ware and graphite crucibles at (1) Rajahmundry (East Godavari district), (2) Dhone (Kurnool district) and (3) South Arcot district.

The Government have sanctioned the expenditure for putting down trial borings at Dhone for tapping good sources of fresh and copious water-supply.

A Ceramic Demonstrator was deputed for three months (December 1945 to February 1946) and a skilled potter for six months (December 1945 to May 1946) for training demobilized soldiers in Ceramics at Madukkarai at the request of the Defence Department. The necessary equipment was lent and the raw materials required in the centre were supplied by the Department.

The Government are planning to start a number of tile and brick factories in several parts of the Presidency for employing demobilized persons and the Department is helping the Director of Resettlement an Employment to select suitable sites for the establishment of these factories and in testing clays to find out their suitability for the manufacture of tiles and bricks.

The West India Tile Makers' Association having agreed to provide necessary equipment and materials for conducting experiments in the manufacture of sanitary ware and sanitary and Mosaic tiles in one of the local tile factories at Mangalore, South Kanara district, the Government have sanctioned, for a period of two years the staff required for conducting experiments and training skilled personnel.

The sale proceeds of Ceramic wares realized and remitted into the Treasury during the year comes to Rs. 4,484-3-6.

Glass.—The Glass Technologist took charge of the post on 18th January 1946. The actual position of the Glass Industry in the Province was first studied by visiting the several factories in the Province. A report on the then existing conditions of the Factories visited was submitted to the Director on 25th January 1946.

Next, a rapid survey of the several raw materials, viz., sand free from iron, quartz, felspar, etc., was conducted at Salem, Mangalore, Gudur, Chirala, Chinnaganjam and Ennore. Representative samples of sand from Chirala, Chinnaganjam and Ennore were collected and sent for analysis to the Departmental Laboratory at Washermanpet, Madras. Also samples of quartz from Salem (White Elephant Rock) and other surrounding localities were collected and sent for analysis to the Departmental Laboratory. The several sands were analysed and their results noted below :—

	Ennore sand.	Chirala sand.	Chinnaganjam sand.
Loss on ignition	0·274	0·473	0·413
(Silica) Si °2	93·990	90·380	86·980
(Alumini) Al 2°3	5·341	8·625	12·139
(Iron) Fe 2°3	0·667	1·106	0·870
	100·272	100·584	100·402

A detailed scheme for a sheet glass plant with a model holloware section attached was prepared and submitted to the Government on 20th February 1946. This scheme involves a capital expenditure of 15·5 lakhs of rupees and a recurring expenditure of about fifteen lakhs.

At the instance of the Industrial Adviser to the Government of Madras who proposed starting glass factories at several centres in the Province, each capable of absorbing some 200 demobilised personnel, a scheme was prepared and submitted to him. To recruit the necessary technical staff for the "Bangle and Bead" training centre to be started at Kalahasti, the Glass Technologist went on deputation to Poona, Bombay, Firozabad, Benares, etc. He was able to find two persons willing to take service in Madras. The Glass Technologist visited almost all the factories at Firozabad and studied their working. He also visited two bead-making units at Benares.

The Glass Technologist has prepared the drafts of the prospectus, application form, etc., concerning the training centre at Kalahasthi and these are being examined. He has also been making efforts to find a suitable site to locate the training centre.

Handmade Paper.

Manufacturing Section.—The three departmental units at Bezwada (Kistna district), Gazulapalli (Kurnool district) and Bugga (Cuddapah district) continued to function during the year and manufactured paper boards, title boards, writing and printing paper, etc., as per statement below :—

Production of the Departmental units during 1945–46.

Unit.	Paper in lbs.	Boards in lbs.	Total in lbs.	
Bezwada	16,342	14,376	30,718 or 13·71	tons.
Gazulapalli.. ..	1,572	6,245	7,817	3·49 ,,
Bugga (Cuddapah).	5,778	4,766	10,544	4·71 ,,
Total ..	23,692	25,389	49,079	21·91

At Bezwada, much progress could not be shown during the year in view of the damage caused to the unit by the East-Coast Cyclone in October 1945. In spite of this, the unit has been able to meet a part of the great demand for paper in the area.

The Unit at Gazulapalli progressed tolerably well with an increased productive capacity from 1st December 1945 due to reorganization of the unit.

The Unit at Bugga continued to work in the new sheds constructed for the same. Cholera ravaged the spot for nearly three months from September to November 1945 interfering with the production of the unit considerably.

This Department undertook the training of elementary school teachers in paper-making as a short term course for three months at the following centres :—

1. *Bezwada in Kistna district.*—The General Assistant of the Unit is in charge of the work and one batch of teachers numbering six is under training

2. *Gazulapalli.*—The Technical Assistant is in charge of the work and the first batch is under training.

3. *Tanjore District Board School.*—The classes in this centre are being conducted by the Special Officer for Hand-made Paper Industry. The trainees have been taking interest in their work.

Investigations.—The following problems received the attention of the departmental officers during this year : (*a*) Manufacture of cellulose from Jammu and Rellu grass—available in large quantities in Kistna district. (*b*) Drying of paper received detailed attention at the Gazulapalli Unit and this problem has been solved to some extent. (*c*) The problem of shrinkage of paper has been investigated into by the Superintendents of all the three Units.

Demonstration.—The demonstrators connected with this section have been able to demonstrate the various processes of handmade paper making on economical lines in the following districts : Vizagapatam, Kistna, Guntur, Cuddapah, Chittoor, Chingleput, South Arcot, Trichinopoly, Ramnad, Madura and Tinnevelly. They have also staged demonstrations successfully at the following exhibitions and have won cups, medals and certificates of merit for the work exhibited by them : Kistna Puskaram at Krishapuri. Sethupathi Maharaja Birthday Celebrations at Ramnad, Cattle Show and Industrial Exhibitions at Mahanandi and Markapur.

The department continued to afford assistance to hand-made paper section run in the following *central jails* : Rajahmundry, Vellore, Salem, Trichinopoly. *District jails* : Madura, Borstal School, Palamcotta, Penitentiary Madras. Particular attention was paid to the re-modelling of hand-made paper section in the Central Jail at Coimbatore.

Training in hand-made paper manufacture was one of the subjects of training in cottage industries imparted by the department in the pre-release training centre of the 3rd Madras Regiment at Madukarai, Coimbatore.

The establishment of a press board factory at Ranipet under the auspices of the South Indian Tanners and Dealers Association, Ltd., has received the attention of the department. A Joint Stock Company to undertake the manufacture of pressed and insulation boards out of spent wattle bark which is now thrown away as waste is under formation.

The department investigated the availability of bamboo in Malabar forests particularly in the forests around Nilambur to find out the prospect of establishing a paper mill in that area with a capacity of fifteen tons of paper per

day. This department took up for investigation of industries concernng the manufacture of hats out of cellulose, loud speaker cones out of paper and of corrugated boards.

Kerala Soap Institute, Calicut.—Dr. K. S. Murthy, M.SC., PH.D., A.I.C., Oil Technologist, and Sri P. M. Kurup, M.A., B.L., Business Manager, continued to hold the posts respectively throughout the year.

The Institute continued the manufacture of household, toilet, industrial and medicated soaps and essential oils on a commercial scale. Two of the old soap boiling pans, first put into commission when the factory started had to be condemned and new pans of a slightly bigger capacity erected in their place. To meet the increased demand for soaps from the general public, double shift in the toilet section was continued for the major part of the year. The purchase of stores by tender could not as in previous years be adopted and in G.O. No. 1447, Development, dated 9th April 1945, Government permitted the Superintendent to purchase stores at his discretion up to 31st March 1947.

Production and accounts.—The total quantity of all soaps manufactured was 676 tons approximately as against 710 tons and 425 tons in the preceding two years. The work in the toilet section had to be restricted for about two months on account of certain structural alterations that had to be carried out to strengthen the walls, etc., which had developed cracks in several places. Towards the close of the year, further improvements in toilet soap packing were effected, individual carton packing being restored in respect of all toilet lines. The new packings have been well received by the agents and dealers.

The sales of soaps during the year has shown a slight fall over that of the preceding year due to restriction in production, though the demand from the public has increased. The following figures show the sales effected during the past three years :—

	RS.
1943–44	6,21,609
1944–45	11,19,685
1945–46	10,55,196

The result of the year's working was a profit of Rs. 34,955 the net profit has been arrived at after charging Rs. 4,813 as interest on capital. The net return to Government on the closing capital was 12·3 per cent as against 38·4 per cent in the previous year.

Sales organization.—As pointed out in the report of the previous year with a view to more intensive working and more equitable distribution of the products of the Institute, the number of agents in the Presidency was increased to fifteen, five new agency areas being created viz., Vizagapatam and East Godavari, Ramnad and Tinnevelly districts, Coimbatore, the Nilgiris and South Kanara, Cochin, Madras and Chingleput districts. The results have justified anticipations and the aggregate sales by the agents showed a marked increase by Rs. 2,86,472 over that of the previous year. Demand for soaps mounted up considerably from all areas but supplies had to be adjusted to the production facilities, Messrs. Kasamali Company, Agents for Madras and Chingleput, showed the highest sales, viz., Rs. 1,24,564 as against the guaranteed figure of one lakh and Mr. R. C. Dalal comes next with a sales total of Rs. 1,20,518 for Malabar alone as against Rs. 1,25,735 in the previous year for Malabar and four other districts.

Visits to important centres.—During the year the Superintendent was on tour for 33 days and the Business Manager for 20 days.

Training of apprentices.—Sixteen students underwent training during the year as against 10 in the previous year. Of these, two were for short course, two for advanced course and two from Andhra University for practical training. Among the new admissions one was from Travancore, one from Assam, one from Gwalior State and the rest from the Madras Presidency. One among the advanced course students was from Ceylon. Also six candidates sent by the Military authorities were trained for four months. As usual a few students sought technical advice and help on various matters and some of them visited the Institute to refresh their knowledge. An instructor and four skilled workmen were deputed to Madukarai in connexion with the pre-release training of Military personnel for a period of three months from December 1945 to February 1946. The necessary equipment for the demonstration of soap-making on a cottage industry basis by the cold process, modified and semi-boiled processes and the distillation of essential oils and the requisite raw materials, etc., were loaded to them.

In addition to this, six servicemen deputed from various centres were given a course of training for four months in soap-making and distillation of essential oils on cottage industries basis as sanctioned in G.O. No. 4176, Development, dated 25th October 1945.

Laboratory.—One thousand, three hundred and sixty samples were tested in the Laboratory during the year as against 940 in the previous year and 700 in 1943–44. This large increase is due to a greater volume of work in the factory consequent on the increased production of soaps and also due to systematic analysis of spent and half spent lyes of soap boiling operations. During the year five test certificates were issued against the samples analysed and the prescribed fees collected.

Manufacture of essential oils.—The manufacture of essential oils on a commercial scale was continued. About 35½ tons of raw materials were treated during the year as against 60 tons last year. Five hundred and twenty-two pounds of oil valued at Rs. 10,718 as against 485 pounds valued at Rs. 7,770 were used in the Institute for the manufacture of soaps, etc. and 456 pounds of oil valued at Rs. 7,330 as against 351 pounds valued at Rs. 5,520 were sold to private parties. The question of appointing agents to popularize the oil was taken up at the close of the year and it is anticipated that the sales will be improved further. The total sales of essential oils amounted to Rs. 18,029 as against Rs. 13,254 in the previous year. The working of the essential oil manufacture resulted in loss of Rs. 5,360.

About 7 tons of Vetivert roots cultivated by the Institute were received during the year and four tons of roots were distilled. The results of distillation were encouraging and the entire production of this oil was sold to the soap section.

It was proposed to plant 20 acres of Vetivert for the crop for 1945–46 but only 17·5 acres were planted and the remaining 2·5 acres which was not suitable for planting last year will be taken up for 1946–47. Harvesting of crops of 1944–45 in all centres was complete, excepting those portions reserved for slips for 1946–47. The crop for 1945–46 is satisfactory but cinamon plants at Paravanna (6½ acres) and Tanur (1½ acres) suffered few casualties.

has been a perceptable fall in the sales when compared with the last year's figures. Further, owing to restriction of the export of shark liver oil to Ceylon market, by the Government of India, the factory could not supply oil to that market during the year.

All the old agents continued to function during the period under report.

The distribution centre at Madras functioned efficiently. A greater part of the orders received from Messrs. Parry and Company, are being diverted to the centre for execution. Arrangements to be made for the supply of the oil in bulk also from the centre were under consideration. "Adamin" also is being despatched from the centre in addition to M.G.B. Oil.

The accounts of the factory were scrutinized for the first time by the audit staff during the year under report.

Other products.—"Adamin" was manufactured and sold during the year under review. Five thousand seven hundred and sixteen bottles of 40 c.c. each valued at Rs. 17,851–4–0 were sold to the public. One hundred and seventy-two bottles of 110 c.c. of the value of Rs. 889 were sold to Government hospitals. The question of manufacturing and marketing Adamin in the form of capsules was also under consideration.

Pure shark liver oil having potencies of 6,000, 12,000 and 20,000 I.U. of Vitamin A was offered to Pharmaceutical firms engaged in Vitamin A preparations as an experimental measure and the total sales of high potency shark liver oil having 6,000 I.U. of Vitamin A, during the period were 232 gallons valued at Rs. 5,194–13–0. Besides, 24 gallons of high potency oil containing 20,000 I.U. of Vitamin A per gramme valued at Rs. 4,440 were supplied to the Government Malt Factory, Coimbatore, for the fortification of Malt extract with shark liver oil. The M.G.B. shark liver oil was supplied as before to all Government hospitals, dispensaries, municipalities and local boards in this Presidency. Steps have been taken to popularise the several grades of the oil in Government hospitals and institutions in Provinces other than Madras.

In order to have a series of brands of high potency shark liver oil for the doctors to choose to suit the needs of all cases and with a view to making the products of the factory quite competitive in line with other indigeneous and foreign products, it was under contemplation to put on the market, new grades of high potency shark liver oil of the following grades :—

(1) Shark liver oil standardized to contain 6,000 I.U. of Vitamin A and 500 I.U. of Vitamin D; (2) Shark liver oil standardized to contain 24,000 I.U. of Vitamin A and 2,000 I.U. of Vitamin D and (3) that of 48,000 I.U. of Vitamin A and 4,000 I.U. of Vitamin D.

Visit to important centres.—During the year the Manager was on tour for about ninety days and visited several important markets both in this Province and in Northern India. The North Indian tour was undertaken with a view to finding out the extent of competition for the shark liver oil and also to find out new markets for the products of the factory. The Manager's report on his visit to Northern India was received at the close of the year.

The Manager and the Technical Assistant of the factory were deputed to attend the meeting of the Industrial panel on drugs and fine chemicals and Pharmaceuticals held at New Delhi on the 18th January 1946.

Manufacture of brilliantine.—The manufacture of brilliantine was renewed on a commercial basis and about 2,000 bottles were made and supplied. There is demand for this product in the market.

Manufacture of dentifrice.—Kerala dentifrice was marketed in solid form packed in both bakelite containers and also in refills packed in card boards.

Experiments.—Fifty-four tons of oils were treated on the whole during the year as against 81 tons in 1944-45. Of this 51 tons of groundnut oil were treated for the Government Oil Factory as against 79 tons during the previous year. One ton 4 cwt. of coconut oil was treated for hospital and over a ton of maroti oil was treated for a private party.

Insecticides.—Experiments on the preparation of Nicotine and Nicotine Sulphate as insecticides from tobacco waste anticipated to be carried out during the year could not be taken up owing to the difficulty of getting tobacco stems and dust.

Pyrethrum extraction.—Experiments on Pyrethrum work was taken up towards the end of the year and the revival of the manufacture of Pyrethrum Extract was under consideration of Government. The balance quantity of extract manufactured during the previous year was distributed to the Health department.

General.—The Institute received a number of enquiries affecting the soap and other chemical industries and they were answered. Small scale experiments on the distillation of Rusa grass oil were conducted in the Kurnool district. Detailed proposals to shift the Kerala Institute to a new site and to expand the production to 2,500 tons a year and to equip the factory with up-to-date machines were submitted to Government.

The Madras Government Products Sales Depot.—The depot continued to sell as usual soaps and products of other Departments of Governments. Articles offered for sale at the Depot were displayed in a few exhibitions.

GOVERNMENT OIL FACTORY, CALICUT.

Mr. F. Abdul Khader, B.A., continued to be in charge of the factory throughout the year. During the period of his deputation to Northern India commencing from 15th January 1946 to 12th March 1946, Mr. P. M. Kurup, M.A., B.L., Business Manager, Kerala Soap Institute, Calicut, was in full additional charge of the factory.

Production and sales.—During the year 16,000 gallons of M.G.B. Shark Liver Oil were manufactured at the factory as against 26,049 gallons in the preceding year. A quantity of 14,634 gallons valued at Rs. 1,96,670-13-0 (gross) was sold during the period under report as against 23,140 gallons valued at Rs. 4,12,073-8-0 (gross) in the previous year. The manufacture of liver oil continued to develop and the returns of crude shark liver oil from the various fish-curing yards and the oil extraction centres have been considerably increased. Four new oil extraction centres and three fish-curing yards were opened during the year. Owing to the cessation of war, the demand for the supply from the Labour Department of the Government of India for the oil was negligible. Besides liver oil industry has been developed during the year under report to a very large extent in the other maritime provinces of this country, especially Bombay and Sind. Moreover, Cod Liver Oil has also found re-entry into various Indian markets. Hence there

Engineering Branch.

Staff.—Sri Rao Sahib S. Gopala Ayyar continued to be the Industrial Engineer up to 24th February 1946 when he was promoted to officiate as Joint Director of Industries and Commerce. Sri Ch. Ranga Rao, Assistant Industrial Engineer, Coimbatore, acted as Industrial Engineer during the remaining period of the year. The Industrial Engineer was assisted by five Assistant Industrial Engineers, one in charge of Government Industrial Engineering Workshops, Madras and the others in charge of Bezwada, Coimbatore and Tanjore Divisions and Post-war Reconstruction respectively. The Industrial Engineer held direct charge of the Madras and Chingleput Subdivisions. Sri B. Narasimha Rao, Assistant Industrial Engineer, Tanjore, was relieved of the charge of Tanjore Division from 3rd April 1945 by Sri K. Janardhana Rao Nayudu who continued to be in charge throughout the rest of the year. Sri Ch. Ranga Rao continued to be Assistant Industrial Engineer, Coimbatore, until 24th February 1946. Sri R. Dorai, Supervisor, was posted as Assistant Industrial Engineer, Coimbatore, and was in charge of the Coimbatore Division during the remaining part of the year. Sri A. Somaraju continued to be Assistant Industrial Engineer, Bezwada Division, throughout the year. Sri T. R. Krishnaswamy continued to be in charge of the Industrial Engineering Workshops up to 2nd February 1946 when he proceeded to the United Kingdom on deputation for technical training. Sri M. A. Rangaswamy assumed charge of the Workshops from 3rd February 1946 and continued to be in charge throughout the year. Sri B. Narasimha Rao assumed charge as Assistant Industrial Engineer, Post-war Reconstruction, Madras, with effect from 10th April 1945 and continued as such until 3rd November 1945 when he proceeded to the United Kingdom on deputation for foreign technical training. Sri D. Ramakrishna Reddy was posted to officiate in his vacancy and assumed charge on 9th February 1946 and continued to be in charge during the remaining part of the year.

Boring.—The Department maintained 14 Armstrong Power Drills, one Bucyrus Armstrong Diesel Oil Engine Drill, one Air Compressor Drill and 124 Hand-boring sets including those manufactured for the Rural Water Supply and Post-war Reconstruction Scheme. The following table exhibits the territorial distribution of applications received for boring, the footage bored in each of the four divisions and other relevant particulars.

Division.	Applications for boring pending on 1st April 1945.	Applications received during 1945-6.	Applications disposed of during 1945-6.	Applications pending on 1st April 1946.	Total feet bored.	Total number of borings put down.	Number of borings successful.
					FT. INCH.		
Bezwada ..	62	171	153	80	23,688 6	317	307
Tanjore ..	49	145	123	71	14,425 9	231	167
Coimbatore.	39	75	38	76	6,137 10	168	111
Madras ..	3	33	33	3	5,767 6	103	69
Total ..	153	424	347	230	50,019 7	819	654

It will be seen that the total number of borings put down and the depth bored during the year were 819 and 50,019 feet 7 inches as against 734 and 4,489 feet 5½ inches respectively in the previous year. There was an increase in the number of borings put down and the depth bored as compared with the last year. The increase is due to the Grow More Food Campaign and the Post-war Reconstruction Scheme launched during the year. The difficulty in securing lining pipes and more especially couplings for lining the boreholes

continued to be experienced during the year under review. The use of reinforced cement pipes in the place of iron pipes was therefore resorted to wherever it was found feasible. The percentage of successful borings works out to 79·85 as against 80·65 of the last year. In addition to the 15 and 3 boring sets manufactured solely for Rural Water Supply and for Post-war Reconstruction Schemes respectively, a large number of departmental sets were also engaged during the year in connexion with the Rural Water Supply and Post-war Reconstruction Schemes. The amount expended during the year on boring operations by the hirers of the departmental sets is estimated at Rs. 2,57,000 approximately as against Rs. 1,77,000 during the previous year. The deepest of the borings completed during the year by a hand-boring set was 153 feet. No artesian springs were tapped during the year.

Seven departmental hand boring sets were actively engaged in putting down several borings for soil tests to the Public Works Department in the Godavari river-bed in Polavaram area in connexion with the project work. The Boring Maistris of this department in charge of the sets have been working 12 hours a day exposing themselves to hot sun above and sand below with high wind allround during summer, to the utmost satisfaction of the Public Works Department authorities. Some hand-boring sets were also engaged for conducting borings for soil tests for the construction of a bridge over the River Kistna.

Sub-Artisan borings.—Among the successful sub-artisan springs the following may be mentioned :—

(i) In connexion with the Araku Valley Colonization Scheme, eighteen borings were put down and completed successfully during the year at places selected by the Agricultural Department. Out of these only three borings were found to be useful for irrigation purposes. These three borings were found to yield ten, fifteen and twenty gallons per minute respectively and trial irrigation pits are proposed to be excavated at these places. A boring put down at the Colony to depth of 100 feet below ground level was found to yield 7½ gallons per minute of pure drinkable water and a well was constructed at the place. This well has become the main and important source of protected water-supply to the residents of the Colony and the number of cases of attack of Malarial fever has considerably fallen down since using the bore well water.

(ii) A power drill boring conducted up to a depth of 200 feet to ground level for the Raja of Munagala Estate has been completed successfully. It has been found to supply eighty gallons per minute at forty feet below ground level. The supply is being utilized for irrigation purposes.

(iii) Three 6 inches/4 inches ground borings were put down in Madura district for Janab Chinna Mohiadeen Pillai Rowther of Kombai, Uthamapalayam taluk. These borings were put down in the slopes of Western Ghats to a depth of 48 feet, 136 feet and 114 feet respectively, yielding 3, 12 and 12 gallons respectively per minute at heights of 1½ feet, 2 feet and one foot above ground level. The bore holes are put down in the tank of the applicant and the water is being utilized for irrigation of his fields through channels.

(iv) At Adirampatnam, Pattukottai taluk, Tanjore district, a ground boring of 6 inches/4 inches was put down for Janab S. N. S. A. Naina Mohammed Rowther to a depth of 142 feet and the spring tapped was a feeble one yielding ten gallons per minute at 1 foot 10 inches above ground level. The quality of water is good.

(v) A 6-inch ground boring put down in Thirumangalam village near Madras to a depth of 16 feet from ground level is found to yield adequate supply for a 2½-inch pump worked by an oil engine irrigating food-crops.

(vi) A number of successful borings have been put down in Conjeeveram area, in wells installed with electric pump sets where the original supply was not adequate even for a few hours' pumping, resulting in abundant supply for continuous pumping. Several trial borings have also been put down enabling agriculturists to construct successful irrigation wells, without risk of failure or loss.

Work of power drills.—The borings put down by power-drills gave satisfactory results. The deepest of the borings put down by a power-drill during the year was 350 feet. Particulars of power-drill borings conducted during the year are as follows :—

Division.	Number of borings put down.	Feet bored.
Bezwada	3	5,12′ 6″
Tanjore	12	2,282′ 6″
Coimbatore.. ..	5	7,75′ 0″
Total ..	20	3,570′ 0″

Amongst the total number of 20 borings the following may be mentioned :—

One ground boring at the National Electric Works, Velankurichi, near Coimbatore, was put down to a depth of 245 feet 9 inches and the yield of the bore is 30 gallons per minute. Anothe rground boring is being put down at the Millet Breeding Station, Agricultural College, Coimbatore. The bore has gone to a depth of 224 feet and yields 50 gallons per minute. It is in progress. Two borings were put down for Hydrogenation Factory at Calicut to the depths of 125 feet and 120 feet. The first bore was tested with power-drill 7 air compressor and found to yield 60 gallons per minute at 14 feet below ground level, the second boring yielding 10 gallons per minute at 52 feet below ground level. But the tests are not complete.

Torpedoing operations.—At the beginning of the year nine applications were pending and two more were received during the year. None of them were disposed of during the year owing to the difficulty in procuring explosive materials such as dynamite, detonators, etc.

Pumping sets.—The department maintained 21 pumping sets for hiring out to ryots to pump out water for irrigation during the period of drought and for well-sinking purposes. There has been an unprecedented demand this year especially in the latter part of the year for high speed as well as liquid fuel pumping sets from private parties and departments of Government, largely due to the present food situation and the consequent well-sinking and Grow More Food campaign. All the available sets were hired out for the above purposes.

New investigations.—There were at the commencement of the year 58 applications pending for investigation and advice. Two hundred and eleven applications were received during the year. Of these 223 were disposed of and 41 were pending at the close of the year.

Assistance to agriculturists and small industrialists—New erections.—The department undertakes the erection of machinery and pumping plants on payment of a normal percentage fee on the capital cost of the machinery installed or on daily rate system. The number of plants erected during the year is exhibited in the statement below :—

Divisions.	Pending on 1st April 1945.	Received during 1945-46.	Disposed of during 1945-46.	Pending on 1st April 1946.
Bezwada . ..	3	5	4	4
Tanjore	5	10	9	6
Coimbatore	4	2	2	4
Madras	..	..	..	..

As the erections in Coimbatore Division are still under progress, particulars with regard to the capital invested are not available in respect of that division. The capital invested on the plants erected in the Bezwada and Tanjore divisions including the cost of buildings, amounted to about Rs. 20,000. Further details of erections carried out during the year under review are exhibited in the following table :—

Division.	Largest plant b.h.p.	Smallest plant b.h.p.
Bezwada	18	10
Tanjore	20	10
Coimbatore	..	..
Madras	..	..

Compounding system.—Under this system, for a nominal fee, this department offers three routine inspections of the plants belonging to the agriculturists and small-scale industrialists, at the convenience of the departmental staff and two special inspections at the call of the owners to attend to sudden break downs if any. For special inspections in excess of two, a small additional fee is charged. The number of plants compounded during the year was 397 as against 376 in 1944-45. The following statement exhibits the number of plants under the departmental supervision in the four divisions.

Division.	Industrial plants.	Pumping plants.	Combined plants.	Electrical plants.	Erections.	Hand-pumps.	Total.
Bezwada ..	19	48	8	..	..	..	75
Tanjore ..	48	33	3	..	8	108	200
Coimbatore.	30	61	12	3	..	..	106
Madras ..	4	12	..	..	..	..	16

The b.h.p. of the installations compounded varies from 1 to 60. The value of the installations compounded during the year except in Coimbatore Division exceeded 8·8 lakhs.

Sugarcane crushing mills.—This department is in possession of eight power-driven cane crushing mills—three with engines and five without engines. Three applications were received during the year and all of them were disposed of.

Sugar manufacture.—The department maintains three sugar centrifugals, which were originally intended for holding demonstrations of the manufacture of white sugar from sugarcane or palmyra sweet juice. These are now hired out to the public for the purpose of manufacture of white sugar by the open pan process from sugarcane or palmyra juice.

Government have sanctioned a scheme for starting three experimental centres for crushing sugarcane grown by ryots and converting the juice into sugar or jaggery with the help of the abovementioned sugarcane crushers and centrifugals available with the department. The centres are proposed to be located at (1) Chodavaram in Vizagapatam district, (2) Ullal in South Kanara and (3) Aragonda in Chittoor district.

Services rendered to co-operative societies.—The plants of the Kallakurichi and Pattiviranpatti Co-operative Societies were under the departmental supervision as in previous years.

Loans for the purchase and erection of pumping plants.—In connexion with the grant of loans to ryots by the Revenue department for pumping installations, this department carried out investigations in regard to the feasibility and utility of the schemes. The existing state loan plants remained under the regular inspection of departmental executive staff during the year.

Industrial enquiries.—The Assistant Industrial Enginers of divisions are also doing the duties of the District Industries Officers in which capacity they attend to the several industrial enquiries and investigation. Details in regard to this part of their activities are embodied in the appropriate place in the report.

Mapping of underground water-supply.—During the year under review the special staff of two mechanics and two draughtsmen and one tracer sanctioned originally in G.O. No. 1015, Development, dated 3rd June 1941, continued to work throughout the year under the sanction obtained in G.O. No. 433, Development, dated 25th January 1946.

The special staff continued the preparation of improved bore-hole maps.

The collection and tabulation of data from records on the lines suggested by the Assistant Geologist was continued during the year and data sheets were prepared for Trichinopoly, Tanjore, Salem, West Godavari, East Godavari, Ganjam, Coimbatore, Nellore districts. Tabulation of data for other districts was also in progress during the year.

Post-war Reconstruction.

Land Colonization Scheme.—Land Colonization Schemes for ex-servicemen after demobilization have been proposed in Salem, Chittoor, North Arcot, Trichinopoly, Tinnevelly, Anantapur, South Arcot, Guntur, Vizagapatam, Ramnad, Cuddapah and Coimbatore. In this connexion trial borings to tap underground sources of water-supply both for drinking and irrigation purposes have been undertaken by this department. Government have sanctioned funds for putting down trial borings in Salem, Coimbatore, Tinnevelly, Madura, Trichinopoly, Anantapur, Chittoor, Guntur, North Arcot, Chingleput and Cuddapah districts. Sites were selected in the above districts by the respective Revenue Divisional Officers in consultation with the concerned District Agricultural Officers. As soon as intimation was received as to the selection of sites from the District Collectors, this department undertook the work of putting down trial borings at the selected sites by deputing necessary number of hand-borings sets and the staff required to operate them.

Though only three out of the twenty boring sets specially ordered to be manufactured in the Governmen Industrial Engineering Workshops, Madras, under this scheme have been delivered and the manufacture of the rest could

not be completed owing to the non-availability of certain essential materials, utilizing as many of the departmental and rural water-supply sets as possible, this department has put down 129 trial borings so far as per details furnished below :—

	Number of borings.	Number of successful borings.
Salem district—		
Manivilandan	10	10
Perumalkuppam	9	5
Mettur	2	.. *
Coimbatore district—		
Dhalavoipatnam	6	4
Tinnevelly district—		
Kumaragiri	3	..
Gangaikondan	2	2
Madura district—		
Kulasekharankottai	6	6
Trichinopoly district—		
Anjalam	3	2
Serugudi and two other villages	7	3
Thuvagudi	7	6
Anantapur district—		
Reddipalli, etc., villages	16	11
Chittoor district—		
Palmaner	11	9
Guntur district—		
Pedugaralla	10	8
North Arcot district—		
Moranam, etc.	16	13
Chingleput district—		
Gudapakkam P. Forest	15	11
Cuddapah district—		
Pulampet	6	6

* Ordered to be abandoned while in progress.

Industrial Engineering Workshops, Madras.—The total value of work orders executed in the workshops during the year under review was as follows :—

	1944-45.			1945-46.		
	RS.	A.	P.	RS.	A.	P.
Pumping and boring receipts	56,713	10	0	58,526	10	0
Inter departmental	17,953	4	0	27,880	1	0
Other Government departments	4,783	6	0	9,654	14	0
Private parties	2,039	10	0	6,155	11	0
Workshop	3	8	0	..		
Total ..	81,493	6	0	1,02,217	4	0

There has been an increase in the work orders during the year over that of the previous year and this is due to the manufacture of boring sets for land colonization scheme and a larger number of orders from private parties and pumping and boring section. The working of the concern during the year resulted in a net profit of Rs. 32,622–11–4 or Rs. 32,623 against a net profit of Rs. 8,634 of the previous year. The increase in the profit is to some extent due to the fact that the value of the dismantled parts of metal tower has been taken as miscellaneous receipt and due to adjustment of training fees of previous years under the Technical Training Scheme credited in the commercial accounts of this year, recovery made during the year for the difference of dearness allowance paid due to the increased rate from January to March 1945 with centage thereon and to the increase by about 25 per cent in the turnover.

Handmade paper unit.—During the year under report one Calendar Feeder was manufactured and supplied to the Paper Specialist, Madras. Orders for two more Hot Presses which have been carried over from last year were completed and they were despatched to the Handmade Paper Co-operative Societies. One more order for the manufacture and supply of a Calendering machine was booked and its execution will be taken up during this year.

Pinto chekku.—One more order from the Kurnool Co-operative Society was received besides the one, carried over from last year. Execution of these jobs have been taken on hand during the year under report.

Manufacture of vacuum crystalisers.—The vacuum crystaliser plant referred to in the last year's report was completed during the year under review. Satisfactory results were obtained in the trials conducted and the plant has since been delivered to the party.

Industries bore-well pumps.—During the year under review eight orders were carried over and two more were received. Five pumps were manufactured and supplied. Owing to the non-availability of pipes necessary for fabrication of drop pipes and barrels the remaining orders could not be completed during the year.

War works.—Four numbers of mild steel shaft for the low and high lift pumps were manufactured and supplied to C.R.E., Avadi. Cutting, drilling and fitting of the mild steel pipes belonging to the Garrison Engineer, E. & M., Avadi were also executed.

Work done to other departments.—Twenty-six orders out of thirty-three for the supply of spare parts to rural water supply pumps to the Rural Water Supply Mechanics received from the Collectors were completed during the year under review.

Experimental section.—The long awaited equipments supplied to this Experimental Section would be set to work only in December 1945 during the later part of the year 1945–46. Part of the equipment has not yet been received. Attempts were however made to obtain the maximum results from the minimum equipments and facilities left at disposal of the Engineer Designer and the following are the problems that have been successfully tackled and that are still under evolution.

Whilst the experiments conducted last year on the I.B. pump were directed at devising means and ways to work the pump by bullock power with the maximum efficiency, those conducted this year were directed at improving the devise producing a suitable standard plant for irrigation purposes. The standard size plant has been subjected to various tests and found to be satisfactory. The former Advisers to His Excellency the Governor and the Members of the present Ministry accompanied by the Industrial Adviser to the Government of Madras and the Director of Industries and Commerce inspected the pump while working and on both the occasions the efficiency of discharge were taken in their presence. On the average the output recorded is fifty gallons of water per minute when the pump worked on a well of thirty feet depth and is driven by two bulls. The pump has been despatched for testing on deep wells and for actual comparison with ordinary country moats.

Many experiments were carried out on the cashewnut roaster designed in this section. A new type of cashewnut roaster has been designed which has proved fairly efficient. The nuts are made to pass on heated oil which ensures an even roasting of the nuts. The provision of a spiral inside the

roaster which is gradually turned by hand from outside causes the nuts to be automatically delivered at the other end of the roaster and consequently there is continuous feeding of the nuts without causing any interruption to the process of roasting. This roaster is undergoing further tests in Mangalore and the data of its efficiency, durability and suitability for use by cottage industrialists is being taken.

Experiments for designing a suitable Treadle Jigger for use in cottage industries have been completed. A Treadle Jigger machine has been constructed It was tested and approved by the Ceramic Expert.

Experiments carried out on Bark Stripping machine made by the Department have shown the need for effecting certain changes in it. The Bark Stripping machine as altered has been tested and approved by the Leather Research Chemist.

Experiments were also carried out on slate cutting and polishing. Suitable machines have been designed and are now under construction. Model machines for the manufacture of slate frames are nearing completion.

Assistance was given in the manufacture of a rice de-husking machine, which was undertaken under the instructions of the Industrial Adviser by Sri Krishnamurthy who had a model of the original Japanese machine to work upon. The newly made de-husking machine appears to be of great use.

Various other minor experiments were carried out such as preparation of case hardening and tampering compounds, treatment of steels, whitening of pepper seeds, peeling of tamarind seeds, suitable substitutes for iron rims for the bullock cart wheels, and road paving blocks. Besides these practical works advice and assistance was given while on tour and at the headquarters to the various industrialists.

Research.—The work on Skate Liver Oil was completed during the yea Experiments on the preparation of isinglass from the air bladders of Cat fishes on anti-oxidants on insulin from the pancreas of sharks, skates and rays and on liver oils of Elasmobronch fish of South Indian waters were conducted. Experiments on the mode of distribution of vitamin in A in shark livers were also undertaken.

General.—Spectrophotometer and vitameter which were ordered from abroad for assaying vitamin A have been received in the factory, and they will be fitted up soon in the new laboratory.

It was in this year that the richest oil so far extracted in this Presidency was recorded in the factory with a potency of 219,000 I.U. per gramme of vitamin A. The oil was extracted from the livers of small sharks which were gravid. The next proximate peak potency of oil was 175,000 I.U. of vitamin A per gramme.

With a view to popularising the products of the factory among the doctors proposals for appointing a Propaganda Officer for the Presidency were submitted to Government.

SERICULTURE.

Staff.—Sri A. T. Janakiraman, B.SC., was in charge of the Sericultural section during the year under review except for a period of three months from August to October 1945 when he was on deputation to China. Sri A. Ramachandra Rao, Assistant Sericultural Expert (I) was in full additional charge of the post of Sericultural Expert, during the period. The Sericultural Expert was assisted by five Assistant Sericultural Experts, one for work connected with the Madras Silk Control Order, 1943, and the Madras Silkworm Control Order, 1945, the second for silkworm seed production work in Kollegal, of

taluk, the third for organising production of indigenous and foreign race seed cocoons in the Hosur taluk, the fourth for conducting research on mulberry and expansion of mulberry cultivation, the fifth for working the scheme for the introduction of sericultural industry in the Northern Circars and Ceded districts. The Sericultural Expert toured for 170 days in the year. He attended a conference at Bombay convened in May 1945 in connexion with the fixation of prices of raw silk and silk fabrics. He was deputed by Government to China for three months to procure the best Chinese races of silkworm seeds and also to study the sericultural technique and organization of the silk industry in that country. During his stay in China the Sericultural Expert visited important Sericultural Research Institutes, silk filatures and toured in the Province of Szechwan to study the sericultural activities in the villages.

Grant-in-aid by the Government of India for the development of the sericultural industry: The scheme for the production and distribution of high grade disease-free seeds and for the conduct of research and diseases of silkworms sanctioned by the Government of India continued to be in operation during the year. As in the previous year the Government of India sanctioned a grant of Rs. 28,820 under the subvention scheme.

Peripatetic Rearing Party, Kollegal.—Under the scheme of re-organization of seed production in Kollegal, the Peripatetic Rearing Party has been merged with the grainage staff in charge of seed production and supply. The staff attached to the Government grainages in all the important sericultural centres and propaganda posts were in close and constant contact with sericulturists with a view to render technical advice in producing examined silkworm seeds and teaching rational methods of rearing. The private seed preparers catering to the demand of the rearers were persuaded to submit the seed cocoons procured by them for rigorous pupa and moth test before distributing the seed to the rearers. It is gratifying to note that the efficacy of microscopic examination in cocoon and moth stages is well appreciated by the private seed vendors. Another notable feature of success of the Peripatetic Rearing Party is the extensive use of cross-breed seed for industrial cocoon rearing in the new centres such as Talavadi in Gobichettipalayam taluk of the Coimbatore district. As a result of active propaganda the acreage under mulberry in this area rose from 20 to about 300 acres.

Aided grainages.—The ten aided grainages sanctioned under the Government of India Subvention Scheme and the twenty aided grainages under the mulberry expansion scheme continued to do good work. The thirty aided grainages prepared and distributed during the year under review a total quantity of 2,704,414 disease-free layings consisting of 44,435 pure Mysore and 2,659,979 cross-breed as against a quantity of 2,854,319 disease-free layings consisting of 179,153 pure Mysore and 2,675,166 cross-breed during the year 1944–45. The preparation and distribution by private graineurs of the pure Mysore layings is not encouraged for obvious economic draw-backs in the local race for commercial cocoon production. The graineurs were persuaded to pay more attention to quality of seed rather than to quantity. Most of these aided grainages have yet to reach the optimum standard of efficiency and it has become an uphill task to make them adopt up-to-date scientific methods in seed production.

Cross-breed seed supply.—There were nine cross-breed centres located in important sericultural villages in Kollegal taluk. Under the scheme of re-organization of grainages, the seed manufacture and distribution is entrusted to four Government grainages—one central grainage at Kollegal and three sub-grainages located at Kunthur, Kamagerai and Hanur to which a few small

feeder grainages are attached as a temporary measure until the buildings which are now under construction are made available for grainage work. The total production of disease-free layings during the year under review in the Government grainages including the feeder cross-breed centres was 2,338,149 consisting of 411,936 pure Mysore and 1,926,213 cross-breed as against 2,716,658 consisting of 510,397 pure Mysore and 2,071,496 cross-breed and 134,765 foreign race. The slight decrease in production of disease-free layings is due to adverse seasonal conditions and to the limitations and handicaps to which the sericultural section was labouring in the matter of suitable buildings for carrying on the grainage work efficiently. The quantity of seed cocoons utilized by the Government grainages during the year was 16,657,973 as against 10,900,000 in the previous year.

Supply of pure Mysore seed cocoons.—The production and supply of disease-free layings in the grainages depends entirely on the efficient organization of seed campaign work. During the year under review, the newly established seed area in Hosur, which is the main source of supply, and the auxiliary seed area in Bandally-Saggiam, Kollegal taluk, were able to meet nearly 67 per cent of the total requirements of Madras (local) seed cocoons for the preparation of cross-breed seeds. Only 33 per cent of requirements of local seed cocoons had to be depended upon Kunigal and Bidadi seed areas in Mysore State. In the Hosur seed area the Government grainage at Berikai is now able to cater fully to the demand in the area in the matter of supply of disease-free local seed. The thorough disinfection of rearing houses and appliances before the commencement of rearings by the seed rearers, periodical inspection of crops while in progress, assured timely supply of perfectly disease-free layings and strict observance of hygienic principles by both the private seed rearers and the departmental staff as will have contributed to the maintenance of a high level of efficiency and success in the seed campaign work in the Hosur taluk. Mass rearings in the seed villages have been completely given up and the quantity of layings issued for seed rearings to the rearers ranges from 50 to 100 disease-free layings per rearer per crop. The use of paddy husk for brushing and cleaning of worms has become a routine feature among seed rearers. Centipede mountages made out of paddy straw have been introduced in all the villages during the year and are gaining popularity on account of their efficiency and cheapness. These Centipede straw cocoonages are universally employed by the silkworm rearers in China and Japan and the Sericultural Expert who visited China during the year brought samples and demonstrated their usefulness in the elimination of wastage of silk while spinning and also minimising the incidence of high percentage of double cocoons in cross-breed rearings. By adopting these cocoonages the rearer is able to save heavy expenditure on bamboo chandrikais. A quantity of 52,633 disease-free layings in 34 crops was brushed during the year as against 41,371 layings in 38 crops during the previous year. One rearer reared 100 disease-free layings, which yielded 42,500 seed cocoons or nearly 70 lb. which a record yield for indigenous race. A total quantity of 8,686,000 local race seed cocoons was made available in Hosur area and was sent to Kollegal as against 7,165,000 during 1944–45 and 488,000 in 1943–44. Of this, a quantity of 7,355,000 was accepted for seed purposes as against 6,673,000 in the previous year. The figures of seed cocoon production speak of the rapid expansion work in the Hosur area. In the Kollegal seed area against a total supply of 4,050,650 seed cocoons in 1944–45, there was a supply of 3,411,200 in 1945–46. The opening of a grainage at Bandally for the preparation of pure Mysore local race layings facilitated considerably timely supply of layings to the seed rearers in this area. The introduction

the gut examination of moths towards the close of the year for the original seed preparation has greatly improved the quality of the seed cocoons and ensured against diseases. Supply of local seed cocoons was continued to be drawn from Mysore parts in view of the increased programme of grainage work in Kollegal. During the year under review a total quantity of 5,664,000 seed cocoons was obtained from the seed areas in Mysore State as against 3,915,870 cocoons in the previous year.

White seed cocoons.—For the production of cross-breed layings are equally important factor is the production and supply of foreign race seed cocoons. Adequate supply of foreign race seed cocoons of good quality has been always the bottle-neck in the preparation of cross-breed seeds on a large scale. The two important sources of supply of foreign race seed cocoons for cross-breed work in Kollegal were the Hope Silk Farm in Hosur and selected foreign race seed rearers in Kollegal, besides the Government silk farms. During the year under review a total quantity of 6,721,638 foreign race seed cocoons was utilized for cross-breed seed preparation as against 8,084,844 cocoons in the previous year. For the entire programme of cross-breed preparation in the Government grainages for the year under review, the quantity of foreign race disease-free layings required to be reared in the Hope Silk Farm and other Government Silk Farms as also selected private seed rearers were determined and a co-ordinated programme was chalked out monthly between Government grainages and the Government silk farms. There were in all forty selected seed rearers of foreign race silkworms attached to the various Government grainages in Kollegal.

Research on diseases of silkworms.—The experimental rearings conducted during the previous years with a view to eliminating Pebrine disease in silkworms by others than the usual methods of cellular rearing were continued. Important conclusions were drawn on the effect of feeding silkworms with hexamythylene tetramine. As a first step the optimum strength of the solution had to be determined. In the second series of experiments, the percentage of disease at each stage in the larvæ and moths was compared in the treated and control beds. Pebrine-free layings obtained from a highly infected batch were also reared and treated with the mixture. The results were found very encouraging as no disease was found. The experiments indicated, firstly that a spray of ' tetramine ' solution can be used to check the infection from spreading from one worm to the other in the same bed. All the worms from a pebrinsed mother are not infected in the early stages. The infection varies from 12 per cent to 100 per cent depending on the infection in the previous generation (A. P. Jameson). It can thus be possible to recover pebrine-free moth and produce pebrine-free layings from the progeny of an infected moth by this method. The second conclusion is that the general principle of feeding substance to silkworms calculated to destroy the disease-causing germs is a satisfactory one.

Silkworm ligature guts.—The silkworm ligature gut manufacturing section was transferred from Kollegal to Palmaner in April 1944 with a view to utilize the worms raised in the Palmaner area exclusively for gut extraction. It was, however, later found that the normal development of the silkworms in the plains in general did not admit of the extraction of longer and superior quality of guts, although the technique of extraction was much improved by repeated trials and experiments. Experimental and research work in regard to qualitative improvement of the guts was continued. Transport of ripe worms from long distances for gut extraction was a serious handicap. An

experiment was conducted by keeping the ripe worms in vapour of spirit in a bottle. The condition of silk glands was studied at frequent intervals and it was found that the glands keep on in good condition for nearly 20 hours. The quality of guts extracted from silkworms treated in the vapour of spirit was satisfactory. To give a better gloss and finish the guts were passed through a hot current of air with satisfactory results. Experiments were also conducted with a view to increase the strength of guts by dipping them in various solutions like glycerine, potassium iodid, paraffin, etc. A quantity of 11,500 worms was purchased during the year. Fifteen thousand one hundred and seventy-five guts of 12 inches, both medium and fine varieties, were sold to the public. Bulk samples of improved guts were sent to the Surgeon-General with the Government of Madras for conducting tests and the results have been reported to be highly satisfactory. Proposals for locating the gut manufacturing section at Coonoor and running it on commercial lines have been submitted to Government and under their active consideration.

Utilization of waste products.—Early in the year best samples of gut casts and mounted hooks were supplied to anglers and other organizations. The knotted casts met with the general approval of 'trouters'. Messrs. Pioneer Sports, Madras, have commended them well. Messrs. The Barton Sons, Ootacamund, testified to the efficiency of the mounted hooks. The plated casts were certified to have landed fish weighing 7 lb. In view of the encouraging response from firms and anglers, the products were given wide publicity in important newspapers and periodicals in India. During the year under review the following quantities of guts and gut products were sold realizing an amount of Rs. 1,591-8-0 as receipts : 12 inches guts—medium, 8,075 ; fine 7,100 ; short length guts 525 ; knotted gut casts 5,746 feet ; plaited gut casts 1,467 feet : mounted hooks—single ply 930 feet ; double ply 927 feet and treble ply 533 feet.

Government silk farms.—The quality of cross-breed seeds depends largely on the virility and purity of foreign races of silkworms—Uni and Bi-voltines —from which male moths are used for cross-breed work. Owing to the exotic nature of these races, considerable difficulty has been experienced in keeping the vigour of the foreign races in the successive generations at a premium. The difficulty was further accentuated when the stock races could not be replenished by fresh imports of races from abroad. These difficulties were largely overcome by the conversion of the Government Silk Farm at Coonoor into a hill rearing station for the purpose of invigorating the old stock races of silkworms by selective rearings and of issuing races for multiplication in the plains with reference to seasonal conditions. To this end the activities of the hill rearing station were expended, by the establishment of additional mulberry gardens in an extent of 3 acres 32½ cents of land. Besides rearing the stock races of silkworms, experimental work calculated to improve the health and development of silkworms and other miscellaneous aspects connected with the industry were carried out. Some of the special observations recorded in the rearings at the hill station were as follows :—

(i) Average yield per 100 disease-free layings ..	62	lb.
(ii) Best yield per 100 disease-free layings (230 cocoons a lb.)	108¾	lb.
(iii) Average number of cocoons to a lb.	363	
(iv) Average weight of 10 ripe worms	30·0	gramm
(v) Best weight of 10 ripe worms	36·0	

The Chinese method of tongue grafting of Roso variety (Japanese) with the local mulberry was demonstrated by the Sericultural Expert in the Hope Silk Farm. This method is most common in China and it is credited with cent per cent success. The following varieties of mulberry are being raised in the nursery attached to the farm with a view to utilize them for grafting and budding purposes with local mulberry: (1) Black Cherry, (2) White Badana, (3) Japanese, (4) Calcutta, (5) Roso, (6) Italian, (7) Philipine, (8) Kashmir, (9) Berhampore. All of them are progressing satisfactorily. The construction of all the seven model rearing houses in the seed farm at Hosur were completed during the year. They were opened by the Hon'ble Sir Arthur Hope, formerly Governor of Madras, and the farm was named 'Hope Silk Farm' in commemoration of his visit to perform the opening ceremony. In this farm a plot of 3¼ acres which is always water-logged and thus rendered unfit for mulberry cultivation has been utilized for paddy cultivation; about ¼ acre was also utilized for growing vegetables. The paddy and vegetables have been sold to the staff. A quantity of 8,000 lb. of paddy straw derived was used as fodder for the farm animals. A scheme for pumping of water from a stream near the Central Silk Farm, Kollegal, at a cost of Rs. 6,300 was sanctioned by Government. With this irrigation facility the work of the farm is expected to stand at a high level of efficiency and usefulness. The construction of a model rearing house in the Central Silk Farm was completed and the rearing section which was hitherto located in a rented building was transferred to the new building. A cold storage plant was installed in the farm with a capacity of 1,200 cubic feet for refrigeration of silkworm eggs, cocoons and moths. This forms an important adjunct to scientific rearing of silkworms and egg production. The following tabular statement shows the work turned out by the several Government Silk Farms:—

Government silk farms.

Name of the farm.	Mulberry acreage.	Number of crops.	Number of disease-free layings, foreign-race.	Quantity of cocoons harvested.			Disposal of cocoons.
							To Kollegal for seed.
(1)	(2)	(3)	(4)	(5)		(6)	(7)
				LB.	OZ.	NUMBER.	
1 Hope Silk Farm	66·27	102	8,595	3,483	2	1,410,000	1,410,000
2 Central Silk Farm, Kollegal	10·50*	..	..	..	..	..	..
Experimental Section	..	..	4,071	947	4	332,400	..
Industrial Section	..	..	6,196	1,243	10	228,932	..
Experimental Grainage	..	..	..	..	..	..	..
3 Government Silk Farm, Mathigiri (Hosur).	12·00	..	..	..	..	..	..
Industrial Section	..	43	4,626	973	1	462,577	..
Experimental Section	..	76	1,533	498	3	215,703	..
Experimental Grainage	..	..	..	..	..	..	..
Government Silk Farm, Palmaner ..	7·06	..	1,103	232	2	126,011	41,112
Government Silk Farm (Thadaguni), Lokkanahalli	6·00	59	2,865	218	5	100,436	22,376
Rearing Station, Coonoor	5·32	..	414	255	4	92,734	..

* ½ an acre under tree mulberry.

Name of the farm	Disposal of cocoons.		Quantity of mulberry consumed for rearing.		Yield of D.F. i 100 lb.	Total rainfall.	Number of students trained.	Number of cellular.
	Kept for farm use.	Sent for reeling.	Yield from Government gardens.	Quantity purchased where.				
	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
			LB.	LB.				
1 Hope Silk Farm	..	..	69,620	..	40	21·03"	25	..
2 Central Silk Farm, Kollegal	..	..	..	..	..	..	..	..
Experiment 1 Section	332,400	..	36,375	31,860	21	26·84"	25	..
Industrial Section	223,932	..						73,818
Experimental Grainage	..	..	..	..	..	..	..	
3 Government Silk Farm, Mathigiri (Hosur,) ..	..	..						
Industrial Section	..	..	59,134	415	21 / 32	21·03"	..	..
Experimental Section	199,922	15,781						53,095
Experimental Grainage	..	..	..	..	..	..	..	
4 Government Silk Farm, Palmaner	57,935	26,964	8,345	..	21	22·41"	3	17,314
5 Government Silk Farm (Thadaguni), Lokkanahali	78,060	..	3,148	2,417	..	..	..	3,308
6 Hill-rearing Station, Coonoor	92,734	..	4,024	5,696	62	60·09"	18	24,995

Expansion of mulberry cultivation.—The several concessions granted to agriculturists as an inducement to take to mulberry cultivation were continued during the year under review. Vigorous propaganda was pursued as in previous years in close co-operation with the Revenue department with a view to increasing the area under mulberry. Adverse seasonal conditions, however, hindered the expansion programme to a certain extent. In the Kollegal taluk the season started with about 17,250 acres. There was an increase of nearly 2,000 acres in this taluk and 200 acres in Talavadi firka of the Gobichettipalayam taluk, under mulberry during the year under review, and the acreage at close of the year was round about 19,450. During the planting season of 1945 a sum of Rs. 18,130 and Rs. 4,510 was disbursed to the ryots of Kollegal and Gobichettiplayam taluks, respectively. In the village of Alandurai in the Coimbatore taluk an area of the extent of 11·5 acres has been brought under mulberry cultivation by certain ryots keen on taking up the sericultural industry. In the Hosur taluk owing to adverse seasonal conditions the acreage under mulberry could be raised only from 235 in the beginning of the year to 280 acres at the end of it. A sum of Rs. 1,400 was disbursed as loans to the ryots. In the Chittoor district the total acreage brought under mulberry cultivation was 137·34. A sum of Rs. 1,000 was disbursed as loans to the ryots during the year under review. Good mulberry gardens were selected in the several localities from which seed cuttings of nearly 1,500 cart-loads were purchased at a value of Rs. 4,070 for free distribution to the new enterprisers in the several districts. Besides this assistance rearing appliances such as stands, bamboo trays, chopping knives, etc., were temporarily loaned to the new rearers and facilities for the disposal of the cocoons raised by them afforded by purchasing them on behalf of the Government filatures. In some places like Palamaner and Hosur the reeling of silk in Japanese foot reeling machines was introduced and suitable staff were posted to train the private parties. A fairly large number of bamboo chandrikais was stocked in all rearing centres for being hired out to the rearers at nominal rates.

Development of sericultural industry in the Ceded Districts and Northern Circars.—In pursuance of the scheme of development of the silk industry in the Northern Circars and the Ceded districts, Government approved the establishment of five mulberry silk farms and one sericultural silk farm. The mulberry silk farms have been located in Chintapalli in the Vizagapatam district, Bhadrachalam in the East Godavari district, Chintalapudi in the West Godavari district, Harpanahalli in the Bellary district and Lepaksi (near Hindupur) of the Anantapur district. The sericultural farm has be

located at Kudligi in the Bellary district. An Assistant Sericultural Expert with headquarters at Hindupur and the necessary staff to run the several silk farms have been appointed. The necessary preliminary work has also been started.

General conditions.—The boom created for the sericultural industry as a result of war conditions continued during the year under review. After the cessation of hostilities and consequent on the stoppage of supplies of raw silk for defence needs, the prices for cocoons and silk reached unprecedented levels. But they are bound to go down when once imports are resumed. No lasting benefit would result unless both the prices and quality are controlled and the rearer is assured of a steady and remunerative market for his cocoons. The rise in prices was not, however, adequately compensated by favourable seasonal conditions. Rainfall was not only deficient but also unevenly distributed. The area under mulberry advanced from 17,584 acres in 1944–45 to 19,931 acres in 1945–46 in spite of adverse seasonal conditions. In order to achieve proper integration with mulberry expansion, the production and distribution of disease-free cross-breed seeds advanced from 618,108 in 1942–43 to 2,568,130 in 1945–46. The Government of India notified in June 1945 ceiling prices which a producer or a dealer may charge in respect of both charka and filature silk of all qualities and grades. The Madras Silk Control Order, 1943, was repealed in November 1945. The control and administration of silk control was transferred to the Provincial Textile Commissioner, Madras. The procedure of releasing charka silk of all grades and inferior filature silk for civilian consumption through public auction was stopped during the year. Reeling of silk by country charkas was completely stopped. The entire production of the two silk filatures at Kollegal has been released for civilian consumption from September 1945 onwards after the termination of the contract with the Government of India. The movement of silk was, however, controlled by the Provincial Textile Commissioner under the Madras Silk Yarn (Dealers') Control Order, 1945, and the Madras Silk Yarn (Transport) Control Order, 1945, which were promulgated during the latter part of the year. The Madras Silk Fabrics Control Order, 1945, was also promulgated in October 1945 to prevent profiteering in the sales of fabrics. During the year under review there was only one auction of silk. One thousand, two hundred and eighty pound 5 oz. of charka silk and 1,650 lb. 3 oz. of filature silk were auctioned for Rs. 1,52,336–10–0, the highest price offered being Rs. 81 and the lowest Rs. 31–4–0 per lb. The price of Mysore charka silk ranged from Rs. 23 to Rs. 36 per lb. and that of Madras filature silk from Rs. 31–4–0 to Rs. 81 per lb. The ruling prices for charka silk waste were between Rs. 1–6–0 and Rs. 2–8–0 per lb. and that of filature waste of various grades from Rs. 1–8–0 to Rs. 6 per lb. The entire production of waste silk was consumed by the Mysore Spun Mills, Limited, Chennapatna, Mysore State. The Madras Silkworm Cocoon Control Order continued to be in force throughout the year. A quantity of 1,114,150 lb. of good reelable cocoons and 56,753 lb. of inferior grade cocoons were transacted in the six Government cocoon markets during the year under review. The quantity should have been very much high but for the sudden and unexpected cancellation of their Cocoon Control Order by the neighbouring Mysore State in August 1945. This resulted in a spurt in the prices offered for cocoons and large outflow of cocoons from Kollegal to the Mysore territory. The high prices prevailing in the adjacent area were a strong temptation to the rearers in the bordering villages to smuggle cocoons across the frontier to the Mysore territory during nights. In spite of the best vigilance on the part of the sericultural staff

this flow of cocoons could not be arrested. It was, therefore, resolved to pay parity prices to Kollegal rearers and accordingly Government directed that a specific bonus of 75 per cent over and above the sliding scale prices could be paid. Government also permitted the purchase of cocoons at Kollegal at the rates prevailing in Mysore if adequate quantities of cocoons could not be secured even after the payment of the bonus of 75 per cent. This concession improved the position considerably. The peak prices obtained for cocoons were between Rs. 3 and Rs. 3-2-0 per lb. In order to improve quality by standardizing production and export markets for Madras silk, silk testing machinery of the latest type from America have been installed at the Government Silk Filatures at Kollegal, to grade silk before marketing. A review of the present position of the industry leads to the strong conviction that concerted action in the industry in all parts of India where conditions are favourable is imperative if silk is to hold its own in the coming years where both price and quality will play a prominent part.

Miscellaneous.—The Sericultural Development Committee constituted in 1943 with a view to bring about closer co-ordination between the sericultural section and the filatures at Kollegal continued to function during the year under review. There were five meetings of the Committee during the year. Important subjects of common interest such as supply of cocoons to the filatures, proper fixation of renditta at the markets and methods to increase the efficiency of the work in the sericultural section and the filatures were discussed and action taken. During the year under review Government sanctioned the payment of stipends at the rate of Rs. 30 and Rs. 25 each for six months for training in sericulture six graduates and six non-graduates with a view to their employment in the sericultural section of the Department. For this purpose Government accorded sanction to the employment for a period of six months from the date of appointment of a Superintendent for Sericultural Training in the grade of an Inspector of Sericulture on Rs. 150—200 per mensem. Sanction was also accorded to the payment of an honorarium of Rs. 250 on the whole at Rs. 25 per lecture to the staff of the department for delivering a course of ten lectures on special subjects during the period of training. Sanction was also accorded to the payment of a stipend of Rs. 15 each to twenty candidates below the S.S.L.C. standard of education to be selected for training for a period of six months in mulberry cultivation, silkworm rearing and grainage technique. These are intended to be absorbed in the sericultural section of the department in lower posts such as demonstrators, operatives, mulberry cultivators, etc. The military authorities opened a training centre at Madukarai, Coimbatore district, with the help of the Department, for affording training in the several cottage industries and sericulture was one of them. The duration of training was for a period of six months. There were 25 military candidates under training in batches. One of the members of the sericultural staff served as Instructor with the assistance of a skilled reeler. A plot of 16 cents of land extent was planted with mulberry. Practical training in the preparation of the land for mulberry cultivation, actual planting, rearing of silkworms in small batches, etc., were carried out for the benefit of the trainees. Regular training in reeling of silk on Japanese foot-reeling machines was also given. This training centre is now run entirely by the military authorities with the staff trained by the department. During the stay of the Sericultural Expert in China for a period of three months he was able to study the autumn rearings of the pure breeds of silkworms in the leading sericultural seed stations. He also visited the leading research bureaus to acquaint himself with the techniq

in the general rearing and grainage work and also in the research and experimental field. With the help of the Chinese Ministry of Agriculture and Forestry 300 silkworm egg cards weighing nearly 100 ounces of some of the best varieties of Uni and Bivoltine species of silkworms were brought back with him. The working of the Chungking Bureau of Testing and Inspection of Commercial Commodities was studied. On the whole, the deputation had been useful not only in procuring good quality silkworm eggs of some of the best breeds of silkworms, which are of immediate need and importance for cross-breeding work in Madras, but also highly useful in the improvement of the industry. A comprehensive five-year plan of post-war development of the sericultural industry in the Madras Province was formulated by the Department to ensure the consolidation of the various improvements that had already taken place as well as to afford ample scope for the industry to get itself re-organized and established on a firm basis in the post-war period. This plan is under the consideration of Government. The sericultural section participated in most of the important exhibitions and fairs conducted in the several districts of the Province. Mr. and Mrs. Khaleeli presented two Rolling Shields one to the best seed rearer of Hosur taluk in the raising of indigenous seed cocoons and the other to the best rearing unit in the Hope Silk Farm for the production of foreign race seed cocoons. The presentation of these shields has created a great stimulus among rearers for qualitative improvement of work in the seed area in Hosur.

Kollegal Silk Filature, Kollegal.—The Kollegal Silk Filature continued to be run by the department and Sri P. A. Raman was in charge of it. The total number of basins in the filature continued to be 152 and its potential capacity was about 4,000 lb. of raw silk per month. During the year 535,023 lb. 9 oz. of good cocoons were purchased; and 30,541 lb. 6¾ oz. of standard and sub-standard quality silk and 2,651 lb. 6½ oz. of Duppion silk were produced at the filature. Eleven thousand seven hundred and seventy pounds of parachute quality silk was supplied to Government of India, Supply Department. During the year, the contracts entered into with the Supply Department for the supply of parachute quality silk and silk waste of grades I and II were terminated due to cessation of hostilities. Thirteen thousand eight hundred and forty-four pounds 7½ oz. of standard and sub-standard quality silk and 2,110 lb. of Duppion silk were therefore released for civilian consumption. The filature also switched on to the production of finer deniers of silk to meet the needs of the public. Eight thousand three hundred and ten pounds 8 oz. of silk waste was supplied to Supply Department and 10,231 lb. of silk waste was sold to the Jaya Spun Silk Mills, Bombay. The production of silk during the year was less than that of last year. This was due to the unsatisfactory supply position of cocoons during the latter part of the year, following the repeal of Silkworm Cocoon Control Order in Mysore state. This resulted in the rise of price of cocoons in Mysore, and Madras cocoons were smuggled into Mysore. The supply position improved to a great extent when Government early in March 1946, sanctioned the enhancement of price of cocoons in Madras by the payment of 75 per cent bonus over the sliding scale of prices.

The health of the labourers continued to be satisfactory. Medical aid was continued. The grain shop was closed on 1st October 1945 and Silk Filatures Employees' Co-operative Stores, Limited, is functioning thereafter. The canteen continued to be popular and the radio set continued to entertain the labourers.

A hot air equipment for drying cocoons and a re-reeling plant were completed during the year.

Government Silk Filatures, Kollegal.—Mr. R. Peychaud continued to be in charge of the Government Silk Filatures as General Manager, till 31st December 1945 when he handed over charge to Sri P. A. Raman, Manager, Kollegal Silk Filature, who continued to be in additional charge of this filature till the end of the year. Sri A. B. Srinivasa Rao was Personal Assistant to the General Manager from 2nd May 1945 to 22nd November 1945 when he resigned his post for reasons of health. Thereafter, Sri L. N. Raj took his place on 31st December 1945 and continued till the end of the year. The total number of basins in the filature continued to be 424. Consequent on the cessation of hostilities, the Government of India on behalf of His Majesty's Government offered the sale of this filature and the Madras Government purchased it. The concern is Madras Government's from 1st September 1945 and the silk produced from that date was released for civilian consumption. During the year 1,019,724 lb. of cocoons were purchased; and 47,519 lb. 9¾ oz. of standard and sub-standard silk and 3,484 lb. 5 oz. of Duppion silk were produced at the filature. Twenty-four thousand four hundred and fifty-nine pounds 3 oz. of parachute quality silk was supplied to Government of India, Supply Department. During the year, the contracts entered into with the Supply Department for the supply of parachute quality silk and silk waste grades I and II were terminated due to cessation of hostilities. Twenty-three thousand and sixty pounds 6¾ oz. of standard and sub-standard silk and 3,484 lb. 5 oz. Duppion silk were offered for sale for civilian consumption. The filature also switched on to the production of finer deniers of silk to meet the needs of the public. Eighteen thousand three hundred and eighty-five pounds 8 oz. of silk waste was supplied to Supply Department and 9,035 lb. of silk waste was sold to the Jaya Spun Silk Mills, Bombay. The production of silk during the year was less than that of last year. This was due to the unsatisfactory supply position of cocoons during the latter part of the year following the repeal of the Silkworm Cocoon Control Order in Mysore State. This resulted in the rise in the price of cocoons in Mysore and Madras cocoons were smuggled into Mysore. The position, however, improved to a great extent when Government sanctioned early in March 1946 the enhancement of prices of cocoons in Madras by the payment of 75 per cent bonus over the sliding-scale of prices.

The health of the labourers continued to be satisfactory. Medical aid was continued and a whole-time compounder has been appointed to the dispensary attached to the filature. The 40 quarters constructed for the labourers have been fully occupied. The Silk Filatures Employees' Co-operative Stores, Limited, started in place of the grain shop have been running efficiently, catering to the needs of the labourers. The radio set continued to provide entertainment to the labourers.

As a precaution against fire, a trailer pump has been purchased and a sub-officer to man it has been appointed. A band of men has been trained in fire fighting. A silk testing house was constructed and necessary machinery installed in it. The silk produced in the two filatures is being tested regularly. The construction of a ten chamber hot air cocoon drying equipment and a re-reeling plant has been taken up.

Industrial Education.

General.—Sri Rao Bahadur N. M. Adyanthaya, B.SC. (Edin.), continued to be incharge of Industrial Education as Joint Director of Industries and Commerce and Chairman, The Technological Diploma Examination Board

throughout the year under review except for a period of one month and seven days from 25th February 1946, when he acted as Director of Industries and Commerce. During this period Rao Sahib S. Gopala Ayyar acted as Joint Director of Industries and Commerce. In G.O. No. 3907, Development, dated 8th October 1945, two Inspectors of Industrial Schools were appointed partly for the work of inspecting aided schools and partly for the additional work connected with the starting of new polytechnics and industrial schools. To one of these posts Sri N. S. Rajan, Principal, Government School of Technology was appointed. As recommended by the *Ad hoc* Committee on Technical Education, proposals were submitted to Government for opening additional industrial schools and polytechnics and for the reorganization of the Industrial School at Bellary, the Government School of Technology, Madras, the School of Arts and Crafts, Madras, and the Leather Trades Institute, Madras. Of the five polytechnics mentioned above one was opened at Cocanada by Sri S. V. Ramamurthy, K.C.I.E., I.C.S., Adviser to His Excellency the Governor on 4th February 1946 and was named 'The Andhra Polytechnic, Cocanada.' Sir Sonti Venkata Ramamurthy also laid the foundation stone for the new block of Polytechnic Buildings.

The foundation stone for the hostel building called the Satyalinga Naicker's Hostel was laid by Lady Gruid Hope on 13th February 1946. The trustees of Satyalinga Naicker's Charities, Cocanada, have endowed a sum of Rs. 50,000 in cash and have made over land and buildings valued at over two lakhs of rupees for the establishment of this institution. They have also promised to give a sum of Rs. 8,000 annually in two instalments to meet the recurring expenditure of this institution. But for their generous offer and the keen interest of enthusiasm they showed at all stages of negotiations and inauguration the scheme could not, however, be brought to fruition so quickly and so early as it was.

Outside scholarships.—Four scholarships were awarded for study in the Andhra University College, Guntur, one scholarship for study in the Indian School of Mines, Dhanbad and six scholarships for study at the Indian Institute of Science, Bangalore. The period of award of scholarship for study in Chemical Engineering at the Indian Institute of Science, Bangalore, was extended from sixteen months to three years.

Twenty of the departmental officers were selected by Government for higher technical studies. Of them eleven have left for United Kingdom or United States of America.

Under the provisions of Chapter IX of the Code of Regulations for Industrial Schools, sixty new scholarships tenable in each case for a period not exceeding five years and ranging in value from Rs. 24 to Rs. 11-12-0 per mensem were as usual awarded with effect from 1st July 1945, to pupils learning trades in the various Industrial Schools recognized by the Government. A bonus equivalent to two months' average scholarships was also granted to pupils who satisfactorily completed the prescribed courses of study during the year.

GOVERNMENT SCHOOL OF TECHNOLOGY.

Sri N. S. Rajan continued to be the Principal of the school up to 31st August 1945 and he was succeeded by Sri V. Raghava Ayyar, Senior Lecturer of the school as Principal, who continued to be in charge of the school for the remaining period. Two new courses, viz., Cinematography and Sound Engineering course and Cinema Operators course were opened during the year under report.

Admission.—The number of new admissions to the several courses during the year was 331 as against 326 in the previous year, of whom 66 were admitted to the Mechanical Engineering course, 79 to the Printing, 12 to the Sound Engineering, 6 to the Cinema Operators courses, and 150 to the remaining courses of study. The total strength of the school at the close of the year was 595 students.

Examinations.—One hundred and forty-one students in all appeared for the Technological Diploma Examinations of whom 26 out of 38 in Mechanical Engineering, 15 out of 57 in Electrical Engineering and 9 out of 18 in Printing Technology came out successful. In addition 26 out of 48 in Composing and Proof-reading and Machine minding came out successful. In the Electric Wiring Competency Examination held both for outsiders and school students, 65 out of 98 came out successful, 7 having secured first class. In the final examination conducted for students of Artisan classes, 62 out of 81 came out successful. The school continued to be the centre for the Technological Diploma Examination, City and Guilds of London Institute Examination and the Victoria Jubilee Technical Institute, Bombay Entrance Examination.

Scholarships.—In addition to the 12 Government scholarships of the value of Rs. 20 each per month tenable for a period not exceeding five years, the Commissioner of Labour awarded 6 scholarships to students belonging to Scheduled classes, while the trustees of Sri Venkateswara Hostel awarded 10 scholarships of the value of Rs. 10 each per mensem. Four scholarships each of the value of Rs. 10 per mensem from Dr. Rangachari's Endowment were awarded to four students. Half-fee concession was granted to three Scheduled caste students and the amount involved was Rs. 54. Concessions to students who are dependents of persons in war service were granted and the amount involved was Rs. 534–6–6. Full-fee concessions were granted to 7 Adi-Dravida students and the amount involved was Rs. 108.

Preparatory Section.—Twenty-six students were admitted to this section and sixteen passed out in the final examination. The section continued to work satisfactorily by imparting training in general education and preliminary technical training.

Casting and Metal Working Section.—Twelve students were admitted to the section during the year and nine completed their training satisfactorily and were awarded certificates. Finished articles were sent to Cocanada at the time of inauguration of the Andhra Polytechnic, Cocanada. A showcase containing finished articles was sent to Rajahmundry exhibition and a certificate of merit and a silver medal were awarded. The total expenditure incurred in the section was Rs. 6,275–7–3 and the receipts realized by sales of finished articles was Rs. 1,237–3–6.

Perambur Branch School.—The number of new admissions into the various courses of study was 63 and the strength of the school at the end of the year was 146 as against 135 in the previous year. The final year examinations were conducted as usual by the railway officials and candidates who came out successful were awarded certificates.

Sports.—The school continued to be a member of the Madras Collegiate Athletic Association and participated in the Inter-Collegiate Tournament.

Finance.—The expenditure incurred on the school during the year 1945–46 was Rs. 1,44,263–3–10 and the receipts were Rs. 35,345–11–0 including the contribution made by the M. & S.M. Railway.

ARTHUR HOPE POLYTECHNIC, COIMBATORE.

The genesis of this Polytechnic is the generous offer of Mr. G. D. Naidu, of Coimbatore, to endow cash to the extent of 1½ lakhs of rupees, machinery valued at rupees two lakhs and a library worth over half a lakh for starting a Polytechnic at Coimbatore. Accordingly detailed proposals were submitted to Government who were pleased to sanction the opening of the Polytechnic at Coimbatore with the following four courses :—

Name of course.	Period of course.	Number of students to be admitted.
Automobile Engineering	3 years.	60
Auto Service Course	18 months.	40
Refresher Course	6 months.	20
Radio Servicing Course	2 years.	40

The institute was opened by Sir Arthur Hope, the Governor of Madras, and was named after him as ' Arthur Hope Polytechnic.'

Staff.—In the interest of efficient running of the newly opened Polytechnic, Government were pleased to accept the services of Sri G. D. Naidu and approve his appointment as Honorary Director. The Polytechnic was therefore under his able management during the year under review. The Department owes him a debt of gratitude not only for his generous offer of money and material but also for his placing his invaluable experience and organizing capacity at its disposal.

Admissions and withdrawals.—During the year under report out of the 144 candidates who sought admission to the various courses, 47 for Automobile Engineering, 27 for Auto Service Course and 30 for Radio Servicing Course were selected for admission. Out of the two applications received for Refresher Course none was selected for admission. On 31st March 1946, the total strength of the institute was 71.

Scholarship.—Mr. G. D. Naidu has donated a sum of Rs. 10,800 for award of scholarships. From this fund scholarships were awarded. Six additional scholarships were also granted from Government funds.

Accommodation.—The Polytechnic is at present housed in the U.M.S. Central Station building and Radio Factory of Mr. G. D. Naidu. Arrangements are being made to acquire lands for construction of permanent buildings to house the Polytechnic.

Hostel.—There is no hostel attached to the Polytechnic. But the students are provided with boarding and lodging arrangements in the hostel meant for War Technician Trainees. Students without any exception are required to reside in the hostel.

Examinations.—Test examinations were held as often as possible and the annual examination was conducted during the last week of March 1946. Thirty students in Automobile Engineering, 15 in Auto Service Course and six in Radio Service Course came out successful and they have been promoted to second-year class.

Finance.—The total expenditure during the year 1945–46 was Rupees 14,724–15–0 and the receipt was Rs. 1,860–8–0. A sum of Rs. 7,500 was collected as deposits which is refundable to the students at the termination of their studies.

GOVERNMENT INDUSTRIAL SCHOOL, MADURA.

Staff.—Sri A. S. Patnaick was in charge of the school till 11th April 1945 when he was promoted as Special Officer for Construction. Sri K. Srinivasan, B.A., B.E., succeeded him as Superintendent and continued to be in charge of the school throughout the remaining part of the year under review

Admissions and withdrawals.—During the year under report 53 students sought admission, of whom 29 were admitted to General Mechanics, 9 to Cabinet-making and 15 to Electric Wiring. The number of withdrawals during the year was 36 including the 10 who passed out in June 1945. The strength of the school on the last day of the year was 63—41 in General Mechanics, 7 in Cabinet-making and 15 in Electric Wiring as against 64 on the last day of the previous year.

Annual examinations.—The annual examinations of the school were conducted by Mr. H. Campbell, Chief Engineer, Madura Mills, Limited, in June 1945. Out of the 11 final year students examined, 10 came out successful.

BOARD OF VISITORS AND SELECTION COMMITTEE.

The Board of Visitors and the Selection Committee were reconstituted for a further period of three years from 20th April 1946.

Toy-making Section.—Government have sanctioned the continuance of this section for a further period of one year from 11th September 1945. The toys manufactured in this section were exhibited at the Government Products Sales Depot and found good sale. The articles manufactured in this section were also sent to the Central Industrial Museum, Madras, and the District Industrial Museum, Nellore, for exhibition.

Other activities.—The school has been selected as one of the training centres for training military personnel as instructors in cottage and small-scale industries. Four members of the Defence Services joined the institute on the 7th January 1946 for being trained in Toy-making. Agricultural implements such as spades, etc., and rice mill spare parts such as huller, shafts, etc., were manufactured during the year under report. Brigadier E. Teague and Members of the Industries Committee, United Provinces, visited this institute.

Finance.—The expenditure on the school during the year was Rupees 59,723-5-10 and the receipt amounted to Rs. 45,779-3-7.

OTHER GOVERNMENT INDUSTRIAL AND TRADE SCHOOLS.

The Government Industrial Schools at Calicut and Bellary and the Trade School at Mangalore continued to function satisfactorily. The strength of these schools at the end of the year was 37 at Bellary, 64 at Calicut and 36 at Mangalore as against 47, 59 and 42 respectively during the previous year. The annual examinations were conducted as usual by the Board of Examiners appointed by Government. Seven students satisfactorily completed their course at Bellary, 17 at Calicut and 4 at Mangalore and they were awarded certificates.

Exhibition.—The Government Industrial School, Bellary, took part in the exhibition held at Bellary during February 1946.

Finance.—The receipts and expenditure of these three schools are as follows :—

Schools.	1945-46.		1944-45.	
	Receipts.	Expenditure.	Receipts.	Expenditure.
	RS.	RS.	RS.	RS.
Government Industrial School, Bellary ..	10,565	31,219	10,577	26,764
Government Industrial School, Calicut ..	45,956	58,956	32,444	51,253
Government Trades School, Mangalore ..	28,311	40,196	17,432	33,240

War Technicians Training Classes in Government Schools.

The War Technician Training classes at all the Government Industrial Schools and Government School of Technology continued to work satisfactorily. During the year, 1,749 war technicians were trained. From 1st March 1946, the training of demobilized personnel was taken up at Government Industrial School, Madura, Government Trade School, Mangalore under the existing sanctions.

Aided Industrial Schools.—At the close of the year, there were 79 recognized Industrial Schools excluding those run by the Government. On the 31st March 1946, there were 3,605 pupils receiving instruction in these schools. Of these, 64 were Europeans and Anglo-Indians, 1,714 Indian Christians, 368 Brahmans, 658 Non-Brahmans, 523 Depressed Classes, nil Aboriginal and Hill tribes, 53 criminal tribes, 218 Muslims, 4 Buddhists, nil Sikhs, nil Parsis and 3 others. An amount of Rs. 1,00,222 was distributed to the aided schools in the form of maintenance grant (including capitation grant of Rs. 2,430) representing an average of Rs. 27-8-6 per pupil per annum. A further grant of Rs. 13,780-2-0 was distributed as equipment grant and Rs. 1,500 as building grant to the deserving schools. The Teacher Training Section attached to the St. Joseph's Industrial School, Tindivanam, South Arcot district, the Setan School of Needlework and Embroidery, Seva Sadan, Madras and St. Joseph's Girls' Industrial School, Guntur, continued to work satisfactorily. There were 20 pupil-teachers (12 men and 8 women) under training, all of whom received a stipend of Rs. 15 each per month. Of these, 14 (6 men and 8 women) completed their courses.

School of Arts and Crafts, Madras.

Strength and attendance.—The number of students on roll at the close of the year was 142 as against 139 during the previous year. The average attendance was 119 as against 156 in the previous year.

Stipends and scholarships.—The number of stipends and scholarships awarded to the students of the school from the various sources are as detailed below :—

School stipends	19
Labour department scholarships	14
Victoria Technical Institute scholarship	5
Dr. Rangachari's scholarship	2
Sri Venkateswara	2
Total ..	42

Examination.—Twenty-eight students successfully completed their courses in the various sections of the school during the year under report.

Museum.—The total number of articles manufactured during the year was 430 amounting to Rs. 5,058–14–0 in value and the value of articles in stock on the 31st March 1946 was Rs. 3,156–6–0. The value of articles sold during the year was Rs. 5,615–10–0 as against Rs. 5,083–11–6 in the previous year.

Finance.—The gross expenditure on the school amounted to Rupees 65,470–10–8 while the receipt was Rs. 6,704–10–0 only.

Advisory Board.—The Advisory Board of the School of Arts and Crafts did not meet during the year under report pending Government Order sanctioning the reorganization scheme of the school. Proposals were submitted to Government for the reconstruction of the Board as recommended by the Advisory Board.

Technological Diploma Examination Board.

The Board met twice during the year to consider the result of the examinations held under its auspices also to discuss other subjects.

The following official and non-official members were appointed as additional members to the Board to represent the subjects or institution noted against each of them :—

Officials.	Subjects of Institutions.
1. The Radio Engineer to the Government of Madras ..	Radio Engineering.
2. The Ceramic Expert, Department of Industries and Commerce.	Ceramics.

Non-officials.	Subjects of Institutions.
1. Mr. L. Narayanan, M.A., B.L.Sc., M.I.R.E., Secretary, South Indian Film Chamber of Commerce.	Cinematography and Sound Engineering.
2. The Chairman, Institution of Engineering (India), South India Centre.	Institution of Engineers (India), South India Centre.

The following table shows the number of students who appeared for the Diploma Examinations and the number that passed during the year under report :—

Subject.	Number appeared.	Number passed.
L.M.E.	77	43
L.E.E.	90	38
L.A.E.	15	10
L.P.T.	19	10

Leather Trades Institute, Madras.

Staff.—Sri K. Seshachallam Choudhury, M.A., M.Sc., continued as Leather Research Chemist and was in charge of the Institute throughout the year under report.

The two new courses started for imparting instruction in Tanning and Leather Goods Manufacture were continued. There was good demand for admission into the courses. The leather articles manufactured at the institute found a regular sale both at the institute and at the Madras Government Products Sales Depot. The total sales value of the leather goods manufactured at the institute amounted to Rs. 3,271–1–0.

Research work.—Research work was conducted at the Laboratory on the following subjects :—

(*a*) Study of konnam bark ; (*b*) sulphonation of pungum oil ; (*c*) leaching of avaram twigs ; (*d*) study of South Indian tannage and analytical study of the research experiments carried out in the tannery.

Three students were given training in the Analytical Chemistry of Leather Manufacture. Besides these, 23 analyses were made for public and the trade. These included tanning materials, tanning extracts, leathers and waters. Efforts at finding out a suitable substitute for wattle bark was also conducted.

Tannery.—Experiments on the suitability of the use of indigenous tanning materials in the place of wattle bark in the South Indian tannage were continued These experiments could not be pushed through as quickly as desired because of lack of space and staff. It is expected that these experiments would be pushed on far more quickly during the current official year. The results so far achieved are not unpromising.

A few shark skins were received from the Fisheries Section and they were tanned.

Enquiries and help rendered to tanneries.—There were about 100 enquiries pertaining to the different aspects of the leather industry and they were answered suitably.

The introduction of a " quick process of lioning " and the wet pickling of goat skins for import were demonstrated to two big tanners at Vaniyambadi.

General.—The Leather Research Chemist continued to be a member of the Leather Research Committee of the Council of Scientific and Industrial Research and attended a meeting of the Committee held at Madras in February 1946.

Assistance to the University of Madras in running the Leather Technology course started by them was rendered by the staff of the institute in accordance with G.O. No. 2698, Development, dated 11th July 1945.

The staff of the institute helped in selecting leather for the Central Jail, Vellore.

Proposals for the expansion of the Leather Trades Institute into an institute of Leather Technology were submitted to Government.

Government Textile Institute, Madras.

Control.—The Government Textile Institute which was transferred to the control of the Provincial Textile Commissioner in 1942 was re-transferred to the control of the Director of Industries and Commerce in April 1945. This has enabled Mr. D. M. Amalsad, who is the Chief Adviser to Government in Textile Industry and Principal of the Institute to work in close and direct co-operation with other officers of the department in improving the Textile Industry.

Staff.—Mr. D. M. Amalsad, Assoc. M.C.T. (Manchester) continued as Principal of the Institute. Though he retired on pension on 5th August 1945, he was re-employed for a year. He continued to serve as a member of the Technological Diploma Examination Board, Cotton Purchase Committee, Central Jail, Coimbatore, Wool Purchase Committee, Central Jail, Bellary, and the Board of Directors of the Ramaraju Surgical Cotton Mills, Rajapalayam. He was appointed Honorary Professor in Textile Technology by the Madras University for the B.Sc. (Tech.) Degree Course. He was permitted to publish text-books in English and Indian languages for students undergoing training in textiles in Government and aided schools. He served as Chief Examiner for Government Technical Examinations in Handloom Weaving. Sri A. R. Ramaswamy, B.Sc., L.T.C. (Hons.), continued as lecturer in Textile

Chemistry. He also held additional charge of the post of Textile Inspector during the absence of the latter on leave. Dr. P. Bhaskara Ramamurthy, M.SC. (Hons.), D.SC., A.R.I.C., continued to be Tinctorial Chemist till December 1945, when he was deputed to the United Kingdom for study in the manufacture of dyes and dyeing of yarn and cloth.

Courses of instruction.—The courses conducted in the institute comprised of hand processes in Handloom Weaving, Bleaching, Dyeing, Cloth-printing and Knitting. The number of candidates who underwent training is furnished below :—

1. Special course for weavers (5 months)	24
2. Special course in jacquard weaving (5 months)	5
3. Special course in bleaching, dyeing and printing (3 months)	28
4. Weaving Instructors's course (10 months)	28
5. Artisan course in knitting (10 months)	3

University course in Textile Technology.—Classes in power-spinning and weaving were conducted in the institute by the Principal, assisted by an Assistant in Textile Technology appointed by the Madras University for five students undergoing the B.Sc. (Tech.) Degree Course in Textile Technology started by the University of Madras.

Instruction to military personnel.—Eight military service personnel received training in the institute in the special course for weavers and four in weaving and dyeing. Necessary staff, equipment and material were provided by the institute for starting a short course of training in handloom-weaving, cloth-printing and carpet-weaving at the Madras Regimental Centre, Madukarai, Coimbatore district.

Training of textile designers.—Government have sanctioned the introduction of a new course in Textile Designing of three months' duration in the institute. Six persons possessing the diploma of the School of Arts and Crafts, Madras, will be trained with a stipend of Rs. 25 per mensem each. After training, they will be appointed in model weaving factories by the Madras Handloom Weavers' Provincial Co-operative Society.

Research work.—Research work was carried on in the institute in (*a*) preparation of new patterns and designs suitable for woven fabrics, (*b*) experiments in improving technique of gold thread manufacture and (*c*) improvements in the use of vegetable dyes.

(*a*) *Preparation of new designs.*—A number of new designs suitable for woven fabrics was evolved and sent to the Madras Handloom Weavers' Provincial Co-operative Society for adoption on a commercial scale, but owing to extreme shortage of cloth and inadequate supply of yarn, even the model weaving factories started by the provincial society could not avail of the full benefit of the designs supplied. They adopted the patterns supplied by the institute but could not produce the artistic designs for want of dobby and jacquard looms. As the research designers in the institute gained considerable experience in preparing designs without having to test the effect on cloth by actual weaving of the design on the loom, a few looms in the institute were transferred to the provincial society to enable the model weaving factories to adopt the designs and to produce cloths on a commercial scale.

(*b*) *Gold thread manufacture.*—Government sanctioned the appointment of a Superintendent conversant with all the process of gold thread manufacture so as to work regularly the machinery installed in the gold thread section of the institute to produce standard quality of gold thread to

suit the requirements of the handloom weavers, so as to enable the establishment of a gold thread factory in a suitable centre in this Province. As all attempts to secure the services of a Gold Thread Superintendent failed, the Principal conducted several experiments in gilding the silver thread with successful results. Improvements such as provision of stirring rods, use of specially prepared gold anodes, modifications in methods of preparing gold solution, etc., were effected for standardizing the quality of gold thread. The gold thread produced was sold in Kumbakonam, Tanjore, Madura and Mayavaram to obtain market remarks regarding the quality of gilding. Weavers appreciated the colour and shine of the gold thread. Efforts were made in vain, through the Director of Industries, Bombay, to recruit three skilled operatives for running the wire drawing machine, wire flattering or Lametta machine and the twisting machine. The Principal has taken upon himself the responsibility of running the gilding machine, as it has not so far been possible to obtain the services of a gilder from Surat. A few capitalists have come forward to purchase the plant or work it on a lease. It is however considered too early to hand over the plant to private capitalists.

(*c*) *Use of vegetable dyes.*—The Tinctorial Chemist carried out experiments in the preparation of dyes, partly from vegetable products and partly from salts. The use of cashewnut shell liquid mixed with fast colour salts was suggested for cloth printing. Copies of the recipe were distributed to various cloth printers and dyers in the Province. He was deputed in December 1945 for foreign study and a substitute was not appointed till the close of the year.

Exhibition.—The institute participated in the All-India Educational Conference and Exhibition held in Madras at the end of December 1945. Models of weaving appliances with a demonstrator were sent and they were demonstrated to the public.

Receipt and Expenditure.

The following statement exhibits the receipts and expenditure of the department during the years 1944–45 and 1945–46 :—

Item.	1944–45.			1945–46.			Decrease (—) or Increase (+).		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Expenditure	26,08,474	2	4	57,99,503	4	11	+ 31,91,029	2	7
Receipts	17,24,714	4	10	20,99,037	9	0	+ 3,74,323	4	2
Net cost	8,83,759	13	6	37,00,465	11	11	+ 28,16,705	14	5

Expenditure.—There was an increase in expenditure to the extent of Rs. 9,83,557-9-5 under the heads A. direction, district ex-establishment, industrial scholarships, industrial schools, Government School of Technology, Leather Trades Institute, School of Arts and Crafts, Sericulture, Kerala Soap Institute, Government Oil Factory, experimental section, miscellaneous experiments—Grants for handloom industry, geological survey experiments, groundnut fund and establishment for price control.

The increase in Direction D. Industrial Schools, J. Sericulture and L. 4. Experimental Section is due to the appointment of additional staff and grant of increased dearness allowance. The increase in B. Engineering is due to purchases of plant and machinery. The increase under C. Industrial scholarships is due to the increase in the number of scholarships and payment of arrear claims. The increase under E. Government School of Technology is due to the purchase of additional apparatus and materials. *F. Leather*

Trades Institute is due to the purchase of additional apparatus and materials. *K. Kerala Soap Institute*—The increase is due to purchase of stores and materials due to increased production. *K. K. Government Oil Factory* is due to construction of buildings and purchase of equipment, stores and raw materials.

Scientific departments—geological survey—the increase is due to the expenditure incurred in 1944–45 adjusted in 1945–46. Expenditure from groundnut fund is due to conduct of Rama Deepa experiments.

Price control.—The increase in expenditure is due to appointment of additional staff and payment of increased dearness allowance.

On the other hand, there was a decrease in the expenditure to the extent of Rs. 10,84,117–10–10 under the heads—J.J. Sericulture (J-1 and J-2), Industrial Engineering Workshops, Grants-in-aid to Industrial Schools, Government Silk Filature, Kollegal Silk Filature, Hand-made Paper, D.D. Stockyard, purchase and supply of Silk and War Supplies section.

The reasons for the decrease under J.1. and J.2.—Sericulture is due to increased staff and transfer of a portion of expenditure to J.3. Grants-in-aid to Industrial Schools—the decrease is due to non-disbursement of buildings grants and grant for Jaggery Industry at Andhra University.

Government Silk Filature.—There was less expenditure which is chiefly due to the non-availability of cocoons.

Kollegal Silk Filature.—There was less expenditure which is chiefly due to the non-availability of cocoons.

Hand-made paper.—The decrease is due to less expenditure under raw materials and increased receipts.

D.D. stockyard.—The decrease is due to increased receipts during the year.

Purchase and sale of silk.—The decrease is due to stoppage of charka reeling and the discontinuance of charka silk for civilian consumption and also debiting under ' deduct receipts '. Rs. 43,300 being excess credit shown by the Accountant-General in 1944–45.

War supply section.—The decrease is due to the closing of the war supply section and increased receipts owing to the disposal of remnant stores lying in the department and due to heavy receipt under mill machinery spare parts stocked in 1944–45 disposed off during the year 1945–46.

The experiments under the items D.D. Arthur Hope Polytechnic, Textile Institute, J.4—Sericulture control and marketing and miscellaneous grants are all new heads of expenditure.

Receipts.—There has been an all over increase in receipts during the year except under pumping and boring and School of Arts and Crafts.

The decrease in receipts under pumping and boring is chiefly due to the sets being mostly used for Government purposes. The increase is appreciable under the heads Kerala Soap Institute, Sericulture, Industrial Engineering Workshops and Fish Liver Oil.

The net cost of the department during 1945–46 was Rs. 37,00,465–11–11 as compared with Rs. 8,88,759–13–6 during 1944–45 and Rs. 23,36,263–11–8 during the year 1943–44. The reasons for the increase in the net cost is due to investing Rs. 22,00,000 as shares in commercial concerns under capital outlay on industrial development.

PROGRAMME OF WORK FOR 1946–47.

Rice-mill spare parts supply and coir.—The continuance of work of distribution of rice-mill spare parts and the manufacture of certain spares in industrial schools.

Expansion of the coir factories and the manufacture of coir goods on a large scale to meet the needs of local and foreign markets.

Further development of the coir industry through the setting up of Coir Advisory Board consisting of coir merchants, traders and officials for advising Government on the ways and means of developing the industry, and intensive propaganda on the extraction of good quality fibre, the spinning of hand twist fine yarn by the user of charkas, and the encouragement of large-scale production of coir goods.

Demonstration of coir spinning and mat-making in the North Vizagapatam district for the benefit of the poor in famine-affected areas and the distribution of charkas free of cost.

Glass.—Fixing up the location for the bangle and bead training centre at Kalahasthi. Getting the several materials necessary (fire-bricks, minor machinery, etc.) and erecting the necessary furnaces and kilns at Kalahasti and starting the training centre.

Survey of raw materials in the several districts of the Presidency except South Kanara, Salem and Guntur districts.

Constant inspections of several glass factories to suggest improvements with a view to raise the standard of quality as well as the quantity of their products.

Experimental Section.—To solve the problem of supplying the public with properly hardened rolling rice mill and wood-working machinery parts manufactured in India. A model of tempering and case hardening furnace will be erected in the experimental section. Drawings and estimates for the construction of the same have been submitted and sanction obtained for the expenditure.

Designing.—Improved automatic punching machine to be manufactured for preparing rice huller screens. The means of manufacturing the screen in India have not yet been perfected, hence its cost is much higher than that of the imported screens. Screens can be manufactured by this punching machine at a cost not higher than that of the foreign screens. The results of the tests carried out encourages this enterprise.

Utilization of slate stones and asbestos and mica refuses proves to be an economic and industrial development to the country, expecially in this Province. Hence the experiment and test on the possible use of these refuses will have to be tackled.

Small hand-operated machines for efficient and cheap manufacture of small articles such as pins, buttons, press-buttons and buckles and similar items which could be done in cottage industry to provide work to many families will be prepared.

Spinning machine.—The preparation of drawings for this machine have been completed and the work is in progress.

Hosiery needles.—Experiments are being carried out on the manufacture of these needles.

Statement showing the receipts and charges of the Department of Industries and Commerce, Madras:

Receipts.	1944–45. Rs. A. P.	1945–46. Rs. A. P.
1. Pumping and boring	72,244 0 8	69,370 15 1
2. Industrial installations	1,964 4 0	5,498 3 6
3. Industrial schools	1,44,648 5 3	1,48,935 15 4
4. School of Arts and Crafts	7,643 13 2	6,719 15 6
5. Textile Institute	..	2,560 7 2
6. Sericulture	1,10,104 8 11	1,22,756 15 1
7. Kerala Soap Institute	8,93,009 10 9	11,28,307 7 8
8. Industrial Engineering Workshops	78,707 0 0	1,12,902 8 10
9. Sugarcane mills	100 11 2	2,441 4 0
10. Rents of buildings	51 11 0	725 0 0
11. Cottage industries	..	11,370 13 8
12. Transfer from the deposit account of grant for the development of sericultural Industry.	30,029 5 3	38,047 9 3
13. Transfer from the deposit account of grant for cottage and small scale woollen industry.	12,851 0 0	4,618 0 0
14. Transfer from the deposit account of grant for the development of handloom industry.	64,422 8 0	73,106 13 0
15. Fish Liver Oil	3,06,858 6 5	3,16,932 15 5
16. Other receipts	11,424 10 6	82,653 5 5
Total	17,34,059 15 1	21,26,948 4 11
17. Recoveries of overpayment	691 14 3	4,847 5 2
18. Collection of payment for services rendered	4,843 1 0	3,692 6 2
19. Receipts in England	..	..
Total	17,39,599 14 4	21,35,488 0 3
Deduct refunds	14,880 9 6	36,450 7 3
Net receipts	17,24,714 4 10	20,99,037 9 0
Net cost of the department	8,83,759 13 6	37,00,465 11 11

Expenditure.	1944–45. Rs. A. P	1945–46. Rs. A. P.
43-A. Industries—		
A. Direction	1,47,891 9 11	1,79,575 15 2
B. District Executive Establishment	3,77,716 9 4	5,07,427 10 7
C. Industrial Scholarships	19,995 0 0	27,974 13 6
D. Industrial Schools	1,55,003 6 6	1,94,606 11 7
DD. Arthur Hope Polytechnic	..	14,724 15 0
E. Government School of Technology	1,02,599 6 10	1,45,198 15 4
F. Leather Trades Institute	32,667 3 0	39,849 10 0
G. School of Arts and Crafts	59,227 11 0	65,197 11 2
H. Textile Institute	..	57,433 1 4
J-1. Sericulture	68,800 0 0	40,115 4 5
J-2. Expansion of Mulberry cultivation	2,35,000 0 1	41,679 15 2
J-3. Propagation and supply of disease free seeds	54,346 0 0	4,61,869 10 0
J-4. Central and marketing	..	36,323 7 2
K. Kerala Soap Institute	10,30,430 9 0	10,93,352 12 10
KK. Fish Liver Oil Industry	2,35,231 12 0	3,47,236 10 8
L. Industrial Engineering Workshops	83,770 10 4	80,279 13 6
L-4. Experimental section	8,260 14 0	23,051 15 7
M. Miscellaneous Experiments	88,696 6 5	1,16,127 6 7
R. Post War Reconstruction	..	1,14,932 3 2
43-B. Cottage Industries	..	1,53,435 1 2
43-C. Industries Grants-in-Aid—		
A. Industrial Schools	1,45,616 8 0	1,33,637 7 6
B. Grants for Handloom Industry	64,422 8 0	83,783 9 0
C. Handspinning movement	..	..
D. Grant for Woollen Industry	12,851 0 0	11,614 0 0
E. Miscellaneous grants	..	20 0 0
36-b. Scientific Departments	23,761 0 0	38,428 13 9
Geological survey	..	..
Expenditure from groundnut fund	2,309 2 0	9,013 13 11
57. Miscellaneous—Rent, Rates and Taxes	..	7,764 12 0
Evacuee Training	..	11,988 0 0

				3-a. Capital Outlay—								
				(a) Investments in the shares of Commercial concerns.	..					22,00,000	0	0
				(b) Hydrogenation factory	..					10,309	8	3
				64-B. Civil Defence—								
				1. Subsidiary scheme	545	6	0			120	0	0
				2. Price Control	33,175	7	5			86,586	0	3
				85-A. Captal Outlay Expenditure on Trading Schemes —								
				1. Government silk filature	(+) 53,921	10	1			(—) 1,05,483	7	8
				2. Kollegal silk filature	(—) 3,32,726	5	9			(—) 2,35,435	4	6
				3. Handmade paper	(+) 1,14,870	1	0			(+) 69,329	10	2
				4. D.D. Stock-yard	(+) 4,809	5	9			(—) 27,863	13	6
				5. Purchase and sale of silk	(—) 2,85,592	15	5			(—) 38,323	10	1
				6. Internal audit establishment	..					(+) 5,000	1	8
				7. Small-scale cottage industry	..					(—) 2,22,425	13	8
				8. Supply of coir stores	..					(+) 10,441	8	11
				9. Mill machinery spare parts	(+) 43,811	9	1			(—) 8,669	1	6
				Total ..	25,9[illegible],764	7	4			57,80,180	13	11
				Expenditure in England ..	9 692	14	0			19,294	9	0
					26,08,457	5	4			57,99,475	6	11
				Loss or gain by exchange ..	16	18	0			27	14	0
26,08,474	2	4	57,99,503	4 11	Total Expenditure ..	26,08,474	2	4		57,99,503	4	11